American Forests and Forest Life

July, 1928

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The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNITY FORESTS.

FOREST RECREATION as a growing need in the social development of the nation; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA and FAUNA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

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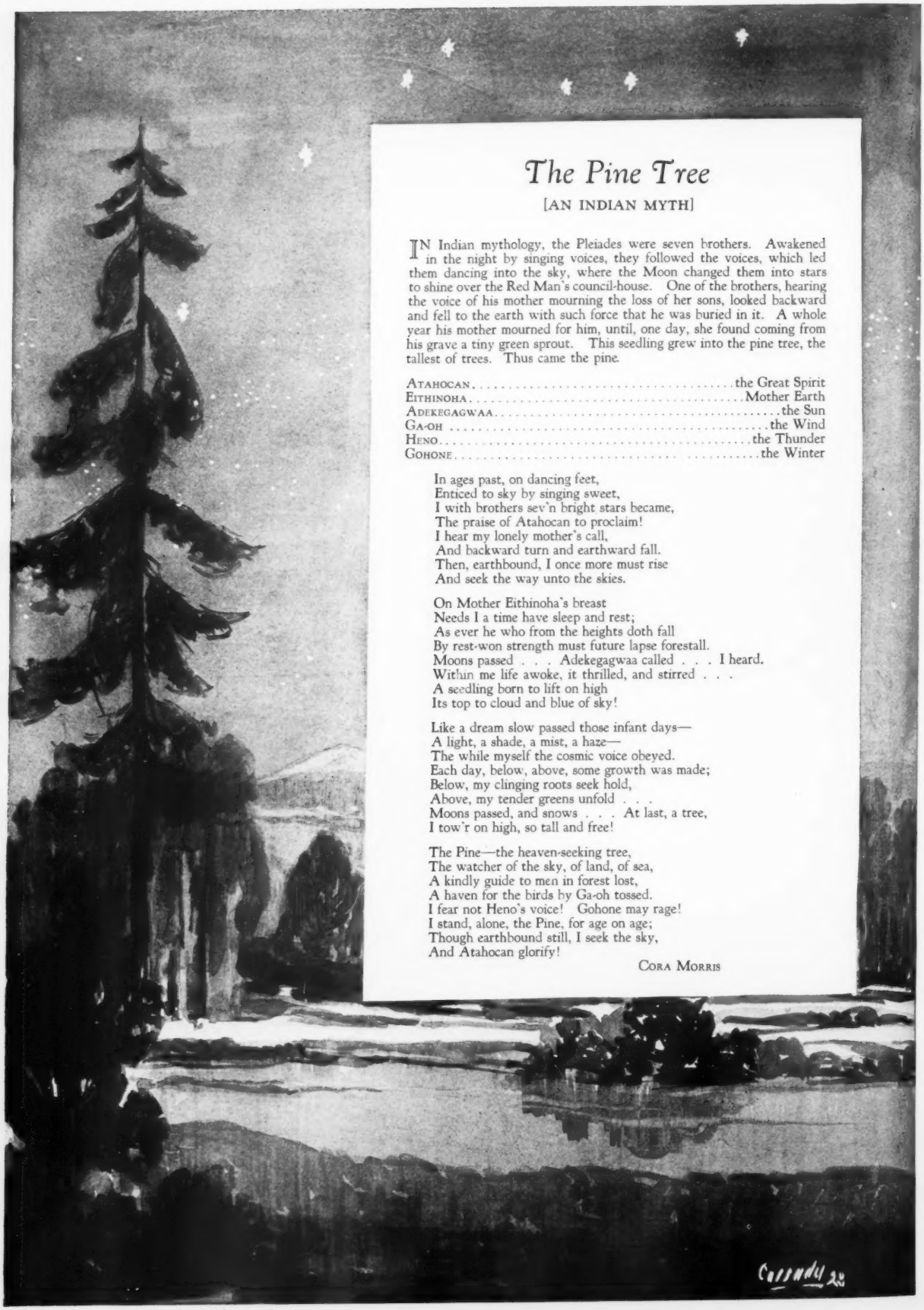
AMERICAN FORESTS AND FOREST LIFE invites contributions in the form of popular articles, stories and photographs dealing with trees, forests, reforestation, lumbering, wild life, hunting and fishing, exploration or any of the many other activities which forests and trees typify. Its pages are open to a free discussion of forest questions which in the judgment of the editor will be of value in promoting public knowledge of our forests and their use. Signed articles published in the magazine do not necessarily reflect the views of the Association. Manuscripts must be accompanied by return postage. Editorial and Publication Office, The Lenox Building, 1523 L Street, Washington, D. C.



The Pine Tree

[AN INDIAN MYTH]

IN Indian mythology, the Pleiades were seven brothers. Awakened in the night by singing voices, they followed the voices, which led them dancing into the sky, where the Moon changed them into stars to shine over the Red Man's council-house. One of the brothers, hearing the voice of his mother mourning the loss of her sons, looked backward and fell to the earth with such force that he was buried in it. A whole year his mother mourned for him, until, one day, she found coming from his grave a tiny green sprout. This seedling grew into the pine tree, the tallest of trees. Thus came the pine.

ATAHOCAN.....the Great Spirit
EITHINOHA.....Mother Earth
ADEKEGAGWAA.....the Sun
GA-OH.....the Wind
HENO.....the Thunder
GOHONE.....the Winter

In ages past, on dancing feet,
Enticed to sky by singing sweet,
I with brothers sev'n bright stars became,
The praise of Atahocan to proclaim!
I hear my lonely mother's call,
And backward turn and earthward fall.
Then, earthbound, I once more must rise
And seek the way unto the skies.

On Mother Eithinoha's breast
Needs I a time have sleep and rest;
As ever he who from the heights doth fall
By rest-won strength must future lapse forestall.
Moons passed . . . Adekegagwaa called . . . I heard.
Within me life awoke, it thrilled, and stirred . . .
A seedling born to lift on high
Its top to cloud and blue of sky!

Like a dream slow passed those infant days—
A light, a shade, a mist, a haze—
The while myself the cosmic voice obeyed.
Each day, below, above, some growth was made;
Below, my clinging roots seek hold,
Above, my tender greens unfold . . .
Moons passed, and snows . . . At last, a tree,
I tow'r on high, so tall and free!

The Pine—the heaven-seeking tree,
The watcher of the sky, of land, of sea,
A kindly guide to men in forest lost,
A haven for the birds by Ga-oh tossed.
I fear not Heno's voice! Gohone may rage!
I stand, alone, the Pine, for age on age;
Though earthbound still, I seek the sky,
And Atahocan glorify!

CORA MORRIS

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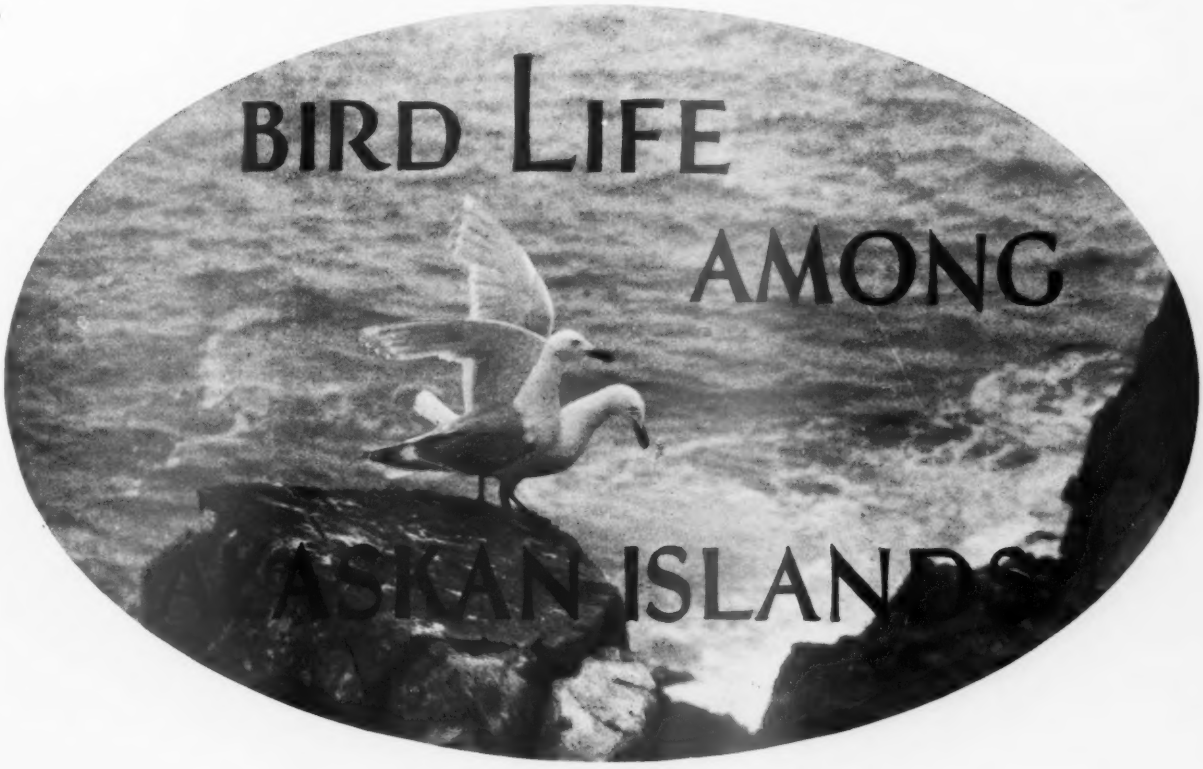


BIRD LIFE AMONG ALASKAN ISLANDS

By ALFRED M. BAILEY

With photographs by George Willett and the author

TRAVELERS on long ocean voyages know the delights of watching the sea birds circling their ship. Slender, trim-winged creatures cleave close to the surface of the turbulent ocean; others wing leisurely about, occasionally diving head foremost, with a flashing of wings and a splashing of spray.

There are many kinds of sea birds; they differ the world over, but in no place are they more interesting than along the storm-whipped and rugged Alaskan coast with its many fog-hung mountain ranges and its precipitous islands. In the summer uncountable numbers of birds congregate on these islands; in the winter many species disperse over the breadth of the ocean—no man knows where.

The islands of southeastern Alaska hold a charm of their own, for the larger ones are separated from the mainland by deep fiords, and they rise abruptly for several thousand feet from the water's edge. They are clothed in a dense growth of vegetation; great forests of spruce tower skyward and form such a canopy above that little light from the sun filters to the ground below. The woods are open, and dense carpets of moss clothe the ground and the fallen trees. The soft-leaved hemlocks, too, grow commonly; the hemlocks and spruces make up by far the greater percentage of the forests. But there are many other trees and shrubs. The stunted lodge-pole pine, dwarfed juniper, and alder grow along the mountain sides, and willows and cottonwoods along the stream beds, while in the open spaces are dense thickets of salmonberry which yield luxuriant berries in the fall.

Many of the islands reach well above timber line, where typical arctic conditions prevail, and alpine flowers are found growing in matted clusters. Alaskan hillsides often remind one of gardens, so brightly colored are the flowers, and I know of no more beautiful sight than fields of flaming fire-weed in bloom, especially if these clusters are among matted banks of enormous ferns.

The islands off the southern part of Alaska are much the same in their rugged characters and vegetation, although

An interesting looking fellow, the great northern Bald Eagle surveys his domain. He is the largest of the Alaskan land birds and, despite a luring bounty on his head, still persists in large numbers

The Eagle's Aerie. Their huge nests are usually built in the tops of gigantic spruces

The oval inset shows a fledgling nearly full grown but still in the friendly nesting-tree

there is a surprising climatic difference in the short distance from Cross Sound to the southern extremity of Dall Island. Above Cross Sound, near the ocean, is the great glaciated area with the rivers of ice flowing into the sea. Two hundred miles or so to the southward there is no ice, and little snowfall, comparatively.

In early spring, when the ice breaks from the swift-flowing streams and the snow begins to melt upon the wooded hillsides, there is a great influx of birds from the south. Among the shore birds are the Aleutian sandpipers and wandering tattlers; surf birds, black oyster-catcher and golden plover. These work the tidal flats, while a multitude of warblers, sparrows and thrushes trail along the border of the woods. Deep in the forests there is but little bird life during migration; all the extensive movements seem to be near the water. Robins are exceedingly common, and rufous humming-birds dart about like gorgeously colored bumblebees. A bedlam of bird music rises from all sides, and there is none more beautiful, more distinctive than the elusive, bell-like note of the varied thrush.

Great V-shaped flocks of geese go honking northward to their breeding grounds, and flocks of ducks of many species work the channels between the islands. It is springtime along the coast of Alaska, the mating season. It is true that clouds hang low upon the mountainsides, that fog often obscures the view, and that

rains drip quietly from sullen skies, but the violent storms are past, the land is being cleared of snow, the vegetation is breaking out green and fresh, the birds have returned, and music is common where only silence prevailed a few weeks before.

Then, in June, the inland waterways seem to clear of bird life. The woods hold their full quota, but the sea birds have taken wing to the off-lying islands, where they nest in more or less security from the ravaging fur-bearing mammals found along the mainland. The large islands are not used to any extent as breeding grounds of sea fowl, but rather the small, precipitous rocks and islets in the open ocean. The ducks and geese from the south nest along the valleys of fresh-water streams of the mainland for the most part, but these pairs of birds are solitary in habits, few living close together. Colony-nesting birds, on the other hand, rarely build their homes on the mainland—at least along the great, rugged, rock-bound coast of Alaska.

Of all the bird islands of southern Alaska, there is none more interesting than Forrester Island, which lies in the open ocean about twelve miles off Dall Island. This is practically the southern tip of the territory. The island is nearly five miles in length and about one in width, and is surrounded by several smaller ones. The vegetation is similar to that of others along the southern coast, and grows so dense in places as to be a veritable jungle, while in abrupt contrast are many open parks. There were a few pools of clear water in one of these open areas near the center of the island, in which yellow water lilies grew.

A large, black-plumaged thief is the northern Raven. An ever-present plunderer along the Alaskan coast, he robs the nests of the birds at will

The "Harbor," on the east side of Forrester, a northern island paradise which is now a Federal Bird Reservation and one of the best places to observe Alaskan bird life along the whole southern coast

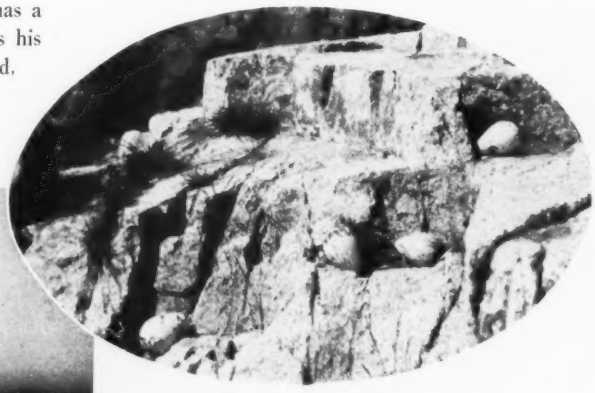
Forrester Island is a Federal bird reservation, under the control of the United States Biological Survey, and during the nesting season a warden is often stationed there. As the island is on the route of the migrating king salmon, it has been used extensively as a base for fishermen who troll in the deep waters. These men were accustomed to make raids upon the murre colonies for eggs, and the Haida Indians often made excursions from the mainland to kill the auklets, but this practice was broken up when the island was placed under government management.

Land and sea birds are equally abundant on this little northern paradise, but, as the land birds are more secretive in their habits, they were not as noticeable as the others. The largest of the land forms, and in many ways the most interesting, is that noble-appearing old fellow—our American bird—the bald eagle. In appearance he is won-

derful, but in general feeding habits he does not hold his own with other birds of prey, for to a large extent he is a carrion and fish eater. It is a common sight to see the eagle on an extensive gravel bar at low tide, where he is feeding upon dead fish. In the early spring they congregate in great numbers where herring are running. In spite of the fact that there has been a bounty on eagles and thousands killed, they have held their own surprisingly well.

Several species of small sea birds nest in tunnels in the woods and along the precipitous walls of Forrester. The ancient murrelet is a small white-bellied species of a general bluish cast above, nesting in great numbers along the eastern slopes. The downy young take to the water, often falling from considerable height to rocks below, apparently without injury, and, accompanied by their parents, are never seen about the island again that season. The Rhinoceros auklet is a quaint bird, twice as large as the murrelet. He has a horny protuberance on his beak from which he receives his name. This species ranges at great distances for its food, the needle fish; both sexes take turns at incubating the single egg. Cassin auklets nest along the crest on the westward side of the island, and flocks of tufted puffins have literally undermined the grassy slopes in many places. The latter are strange appearing birds with large razor-edged beak. They are easily the clowns of northern nesting sea birds, for they are dressed in solemn black, but have straw-colored tufts extending backward from the sides of their heads, white eyes, and red legs and feet. They are droll-appearing, but are adepts at caring for themselves.

The murres live in great colonies upon ledges along the precipitous sea walls, and upon the large isolated rocks where it is practically impossible for one to land from a small boat. They are auk-like, and sit bolt upright on their heels with white breasts conspicuous in the sunlight. From a distance the ledges often look as though drifted with snow, so closely are they perched upon their nesting shelves. Murres are tame, but, when suddenly alarmed, dive headlong into space, kicking a shower of eggs with them. They drop for considerable distance before catching the wind on their small wings, and then dart off with amazing speed. The eggs are very large for the size of the bird and are much larger at one end



The Murres live in great colonies on rock ledges along the precipitous sea walls of Forrester. They are beautiful birds, with glistening snow-white breasts. The unusually large and peculiar shaped eggs are laid on the bare rock shelves

Dressed in solemn black, with straw-colored tufts extending back from the side of his head, white eyes, an enormous bill and red legs and feet, the droll looking Tufted Puffin is easily the clown of northern nesting birds

In no place are the sea birds more interesting than along the storm-whipped and rugged Alaskan coast. This is the wind-swept crest of the precipitous western side of Forrester Island, which lies in the open ocean twelve miles off Dall Island

than the other, so they have a tendency to go around in a circle rather than to roll straight.

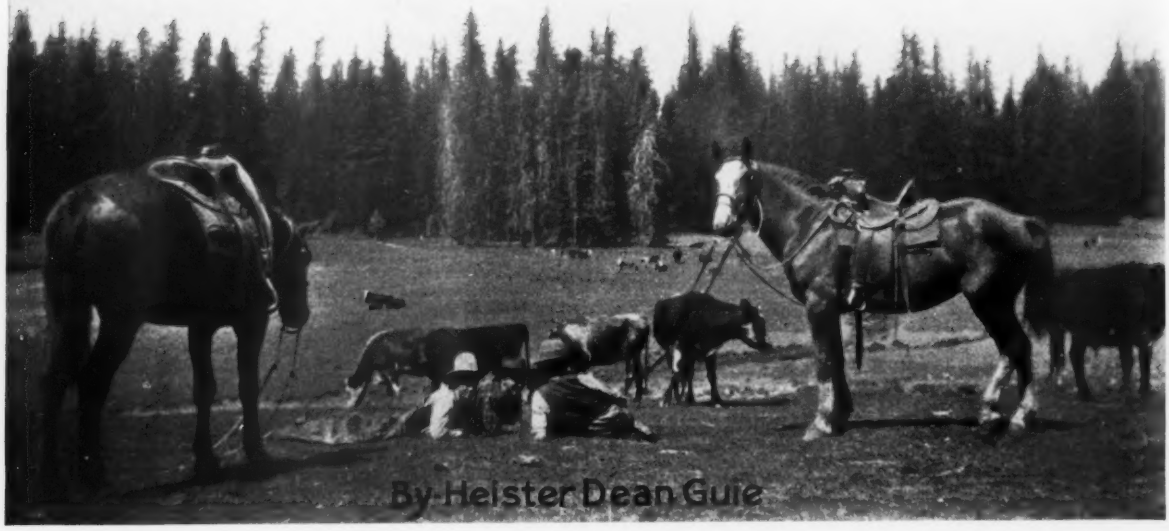
The glaucous-winged gulls are among the most conspicuous of Forrester birds. They nest in small colonies among the boulders near the ocean. Sea gulls, as a rule, are rather predaceous and do great damage to other breeding birds, but this species, on Forrester at least, does not seem to have developed this bad habit. The brownish, long-legged youngsters are capable of running soon after they are hatched, and they make full use of their ability to run and hide when anyone comes near.

An ever-present bird along the whole of the coast is the northern raven, a large, strong-billed robber which makes an easy living among the bird islands, where it plunders at will. It is a common sight to see one of these black-plumaged thieves drop onto a ledge, and, while the foolish murre looks on, grab an egg by the small end and fly away with it. Fish crows are very common, also, and equally destructive, but they are more inconspicuous in their thieving, for they eat their eggs upon the ledges instead of flying away to some convenient limb. The crows usually build rather bulky nests, lined with deer hair, in thick clumps of hemlock, but on Forrester a few have developed the unusual habit of nesting far back under boulders along the beach.

Forrester, then, is one of the best places to see Alaskan bird life along the whole southern coast. There are many small birds, crossbills, siskins, thrushes, wrens, chickadees, and kinglets; Townsend's fox sparrows, the most abundant of the land birds, work secretively in the woods; rusty song sparrows along the beaches; and occasional Oregon juncos are seen upon the higher part of the island. At night one may hear a myriad of small voices out at sea—the calls of the petrels, two species of which, the fork-tailed and Beal's, nest commonly on one of the larger islands off the southern end of Forrester. They are nocturnal, and few are seen in the daytime unless one visits this island, where they have literally undermined the ground with their nesting burrows.

One might go on with the delights of Forrester, dwelling upon the wonders of the forests, the invigorating climate, the beauties of the surf, and the arrow-like flight of falcons as they pursue other birds. Forrester is more than a bird reservation—it is a great outdoor laboratory where one may study many branches of natural history—where one may wander through an interesting and, in places, dense forest, climb the cliffs, and just let the world go by.

Cowboys Colts and Calves

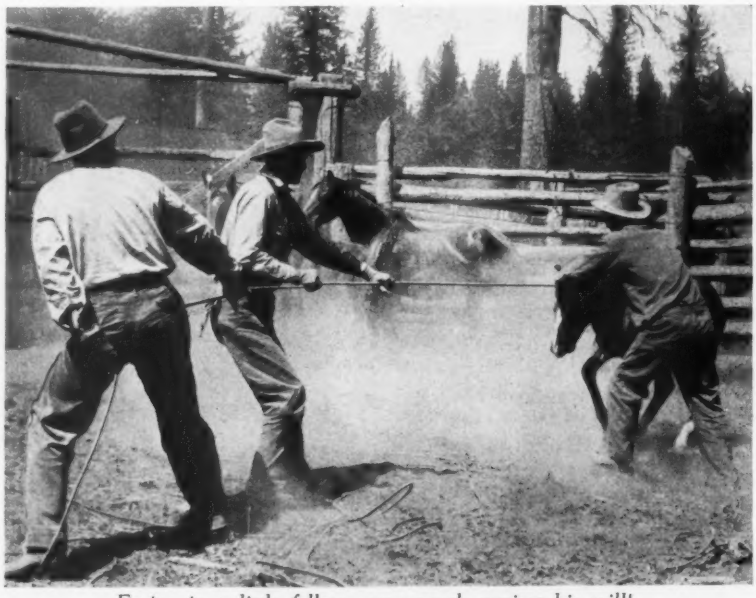


By Heister Dean Guie

In the Minds of Most People Today the Hard-riding, Carefree Buckaroo Exists only in Fiction, but there is a Bit of Cow Country in Central Washington, Hemmed in by the Wenatchee Mountains, that Still Draws the Cowboy, Lariat, Chaps and Branding Iron. Mr. Guie has Revealed this Northwest Outpost of the Cowboy, and his Determination to go on "herdin'" Despite the Encroachment of Civilization

OUT where the Wild West—what's left of it—ends, hemmed by farms and orchards and the snow-peaked Cascade range, is a bit of unspoiled cow country, the kind that makes the small boy in almost every man wish civilization hadn't been in such a hurry to exert its claim from coast to coast. Here in the Wenatchee Mountains and their fraternal foothills and flats the branding iron and lariat still have their place in the scheme of things; bronc peelers still practice their trade, and anyone who travels afoot is hardly a part of the picture. That is, unless he's been piled unceremoniously and merely is walking homeward.

This northwest outpost of the cowboy, in central Washington, embraces a rough lot of canyons, hills and tablelands that live up to their definition and are more or less flat and adorned with patches of pine and tamarack timber and luxuriant mountain meadows. A crow winging its way above this cow land's irregular boundaries probably would cover about nine hundred miles. To the west, the thickly timbered steeps of the Cascades and their frosty crowns and peaks frown on the more sparsely tree-clothed slopes of the Wenatchees. To the south and east the cow country dissolves into fenced hay lands of the Kittitas Valley. Still farther east it is bounded by the majestic Columbia River, which also, by virtue of its snakelike course, forms part of the northern line of demarcation between the cow land and the tamed—the orchards and farms of Chelan and Douglas counties. Only a remnant of a once vast cattle domain, but it retains the savor and the romance of the days when central and eastern Washington counted more cowboys than plowmen, and more Indians than both. It is historic



Easing in a little fellow—very much against his will!

Just as in the old days when the cowboy ruled, branding time on the Wenatchee Range furnishes plenty of thrills

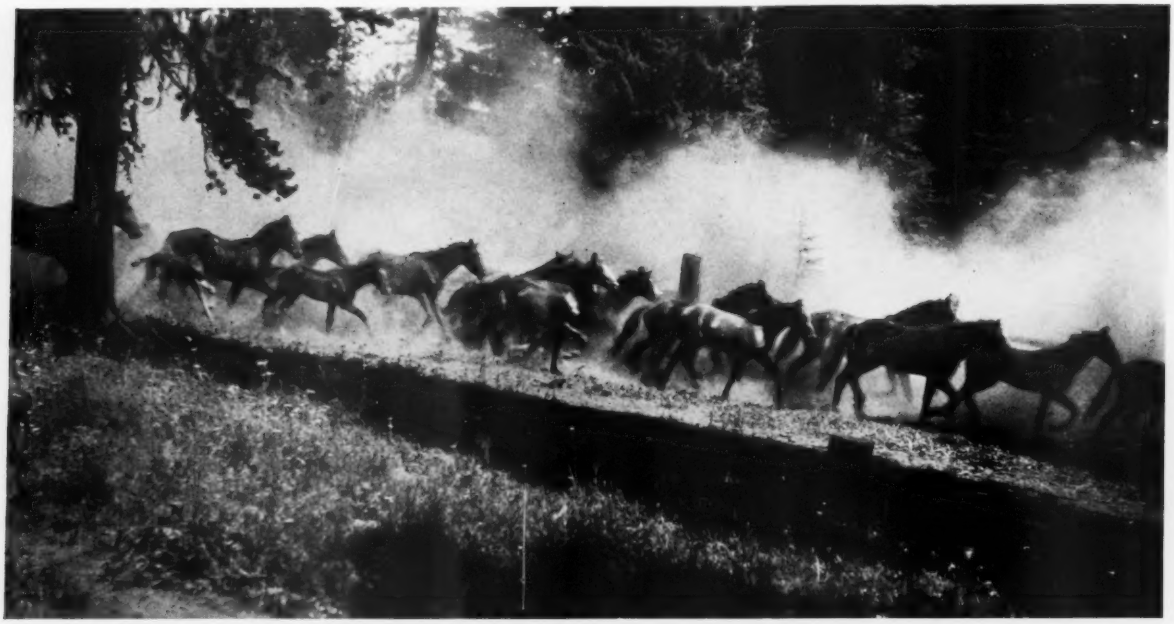
Due for a fall. This husky young calf doesn't like the idea, and is giving the punchers plenty of play

Down at last but still resentful. It's dust and dirt, sweat and hard, gruelling work for the cowboy but it's much better than a desk job any day

Branded, and no longer a maverick. Wherever the range may lead, this young fellow will always carry the brand of the "outfit". It's all in the life of the cow range

ground. Through it, north and south, weaves the Colockum Pass road that in frontier days served as the main route of wheeled transport between The Dalles on the Columbia River and the British Columbia line. Over the Colockum ox and mule teams hauled wagon loads of flour, shovels, picks, clothing, whisky, and all the other essentials and little luxuries required by miners, ranchers, and settlers in northern Washington territory. Over the Colockum, too, operated a stage line between Ellensburg, in what is now Kittitas County, and Wenatchee, Chelan County. Less than a mile north of the summit of the pass, which is 5,280 feet above sea level, are the bleached and scattered timbers of the half-way station, where coach teams were changed and passengers and drivers refreshed themselves.

Four miles west of the pass road and paralleling it more



Wild mares and colts headed for the corrals—only they don't know it. Somewhere ahead is the "point rider," and not far behind are the other buckaroos whose job is to keep the herd moving

or less is the old Nanum trail over which Major Robert Seldon Garnett marched his troops in August, 1858, in pursuit of an elusive band of hostile Indians. Major Garnett became a Confederate general in the Civil War. Under him in the Wenatchee campaign served Lieutenant George Crook, gaining experience in Indian warfare that was to stand him well in later years when he compaigned against the Sioux, Cheyennes and Apaches.

The Nanum trail was old before the infantry and dragoons of Garnett's command toiled after the breechclout warriors. For generations it had been the favored path of nomad bands. Over it traveled war parties, hunters and squaws in quest of camas roots, the roots that supplied the flour for aboriginal bread. The camas still blooms, and its roots still are dug by a few of the older women from the Colville reservation to the north. They make special trips to the high mountain meadows and wind-swept ridges to gather not only the camas roots, but those of other plants that furnish them with the ingredients for apparently efficacious medicines.

The cowboys of the Wenatchee region are of the same breed that continues to uphold the traditions of the Old West in Montana and Wyoming and on down to the Mexican line. Some are native sons. Others have drifted in from the range lands east of the Rockies. Most of them ride with the short, open stirrup, whereas the punchers of Montana and Wyoming use the long stirrup.

Like all cowpunchers they loon askance at shovels and "working on fence," and like all cowboys they would rather color their coffee with condensed milk than to have fresh milk or cream if it involved the menial task of milking.

As for their sentiments regarding sheep; well, a sheep smells just as bad to them as it ever did to the old-time buckaroos. It isn't so much the smell that annoys. It's what goes along with the smell—shortened pasturage for the beef and saddle stock when the herders, by accident or design, shove their flocks onto the cow range.

Most of the cattle in the region are Herefords, whitefaces. Wintered along the Columbia River and in the Kittitas Valley, they are worked up into the lower, treeless hills soon after the snow goes off in the spring. In the latter part of June or in early July they are pushed on up into the mountains, where they remain till snow flies in the fall.

The Two-Bar and Balloon brand outfits, running from 1,500 to 2,000 head each, are the largest operators and maintain permanent summer camps—log cabins and corrals—on the mountain tableland. Here the nights are always cool, while the days, even in the hottest months, seldom are uncomfortably warm. Numerous small streams head

(*Continued on page* 447)

Reducing the Drain on Our Forests

Wood Preservation Plays an Important Rôle in Conserving Our Timber Supply

By R. K. HELPHENSTINE, JR.

THE human race in its advance toward civilization has ever been dependent upon an adequate supply of wood in various forms. With the passing of the centuries this dependence has constantly increased. Wood, daily essential to man's individual welfare, has also been absolutely indispensable to the inception, progress, and actual existence of mighty industries. Without a continuous supply of wooden crossties, the vast rail transportation system of this country would have ceased to function long ago. A lack of wooden poles would soon disrupt our veritable network of telephone and telegraph communication, as well as seriously interfere with the transmission of electric power. A dearth of timber would most certainly halt the extensive operations of our great mining industry. Many other national enterprises that are large users of timber of high quality in various industrial forms would be similarly affected should the supply of forest products be suddenly cut off.

Photograph by the Federal Pipe and Tank Company

A section of the world's largest wood pipe, in northern California. It is made of pressure treated wooden staves, and measures sixteen feet inside diameter. It is built to carry a water supply of over one hundred and twenty million gallons a day, and testifies to the permanency of wood after preservative treatment. By lengthening the life of wood in this way, the drain on the source is greatly reduced

Of light weight, good strength, low cost, and readily fabricated, wood is especially suited for construction purposes. Although not always durable, it can be made to last from two to four times its natural life if properly treated with preservatives.

The present area of forest land in the United States is about 470 million acres. This is only fifty-seven per cent of the original forest area, and much has been cut and burned over, so that less than one-third of the country's original forest wealth now remains.

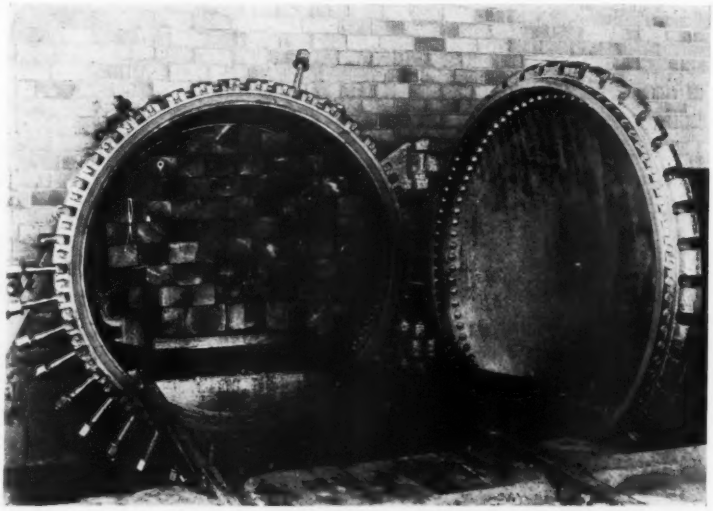
At this point it may not be inappropriate to state that the total annual drain upon the forests of this country amounts to twenty-five billion cubic feet of wood in the form of lumber, timbers, poles, piling, crossties, fence posts, mine props, and similar products of the forest. It also includes over four billion cubic feet of wood lost through preventable decay alone. Compared to this enormous consumption, there is being produced annually through growth a total of but six billion cubic feet of wood. It is therefore obvious that we are using our timber about four and a half times as fast as it is being replaced by natural

Treating fence posts by the open tank process. The progressive farmer of today appreciates the economy in preservative treatment of wood.

reproduction. It is also obvious that, in order to meet future requirements, the nation must not only plant timber but must also conserve the remaining supply. Wood preservation is one means by which forest conservation can be effectively accomplished. Not only does the preservative treatment of timber bring about a direct saving to the individual user, but the general adoption of such measures means a very great saving in the timber resources of the nation as a whole, since by prolonging the life of timber the drain on our forests is reduced.

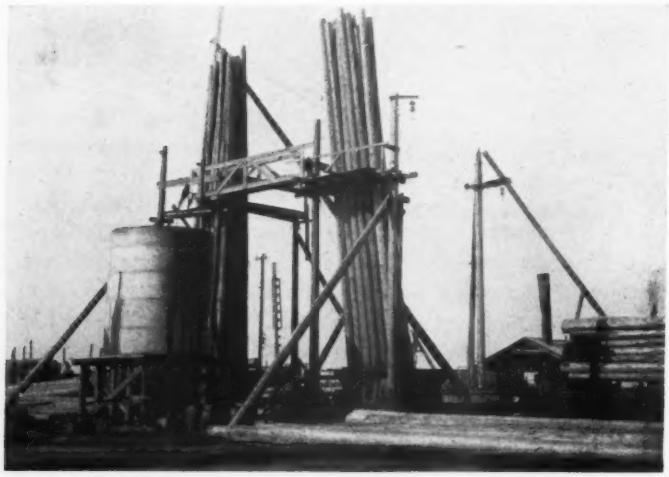
Decay in wood is the result of the action of low forms of plant life known as fungi and not the fermentation of the sap or action of the soil. In the life cycle of fungi there are two distinct phases of development. First, the vegetative stage (*mycelium*), and second, the fruiting stage. The *mycelium* consists of microscopic threadlike filaments, usually branched, which penetrate the wood either by traversing the natural longitudinal passages, or by passing through the walls or through the pits in the walls of the wood fibers.

Fungi subsist on wood by changing it into food through exudations that produce serious disintegration of the wood substance. Toadstools, dog ears and similar mushroom formations known as fruiting bodies are evidence of fungus infection. They produce spores or seeds, which when ripe gradually fall off, sometimes in a cloud, and, being light and infinitesimally small, are carried by the wind, rain and other natural agencies in all directions. When they find lodgment where conditions of growth are favorable they gain a foothold and develop rapidly, decay apparently starting spontaneously. Injury to the wood is caused by *mycelium,* that part of the fungi which grows and spreads into the interior of the wood, and the destroying action is not stopped merely by removing the fruiting bodies. Fungi also extend themselves by growing from one piece of wood to another. It can be seen that decay is infectious and decaying wood left lying around is a menace to all other sound wood in its vicinity. Fungi requires food, air, moisture and heat to develop, and warm, damp, shaded locations are the most favorable to their growth. If one of the four essentials mentioned is lacking, fungi can not exist. It is out of the question in ordinary situations to deprive fungi of air and warmth, and although moisture can in some cases be eliminated, this is



Photograph by the Century Wood Preserving Company

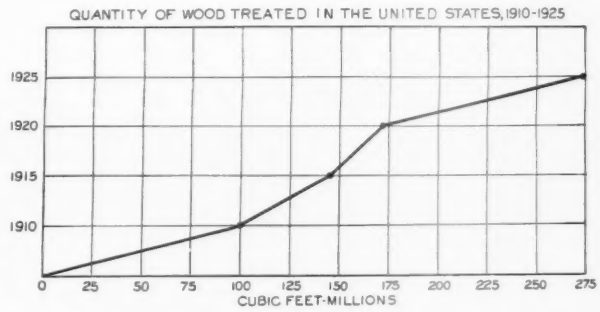
A "close-up" of the loading end of a pressure treating cylinder containing a charge of railroad crossties.



A typical open tank (non-pressure) treating plant for the butt treatment of poles. Preservative treatment doubles the life of such poles, of which our annual consumption is over three million.

impracticable where the wood is exposed to the elements. The food supply can, however, be poisoned by injecting chemicals into the wood, and it is upon this principle that the practice of wood preservation is based.

Coal-tar creosote and zinc chloride are the two preservatives that have from long and satisfactory use become standard in this country for the treatment of wood to prevent decay. Mercuric chloride, sodium fluoride, and several proprietary preservatives are also employed with good results, but only in relatively small quantities.



Coal-tar creosote is a brownish-black heavy oil obtained from the distillation of coal tar. It is practically insoluble in water and is used in the treatment of wood for all classes of construction. Zinc chloride is a metallic salt, and because of its tendency to leach out in contact with water, is most adaptable for the treatment of material that is intended for use in regions of minimum rainfall. It is extensively employed in the Southwest for treating railroad crossties. This preservative is particularly well suited to the treatment of wood in house construction, where it is usually painted, or where the odor or color of creosote would be objectionable. Impregnation under pressure is the most satisfactory method of treating wood with preservatives, and, although the different pressure processes vary slightly in minor details, the general principle is the same. With pressure the penetration of preservative can be regulated so that the quantity forced into the wood may be varied to suit different requirements. In lieu of pressure treated material, non-pressure methods are often employed. These consist of the hot and cold bath treatment, soaking in an open tank, dipping, brush treating or spraying. The hot and cold bath or open tank treatment is the one most commonly used in the butt treatment of poles. If the timber is well seasoned and the treatments are carefully made, the added life obtained by non-pressure methods is well justified.

Equipment of the modern pressure treating plant is quite elaborate, and involves the expenditure of a considerable amount of money. It consists of one or more cylinders from six to eight feet in diameter and forty to one hundred and seventy-two feet in length. Since working pressures as high as 200 pounds per square inch are used in the pressure treatment of wood, these cylinders must be of good, sturdy construction. Inside the cylinders are tracks on which run tram cars carrying the timber to be treated. These cars when loaded with timber are shoved into the cylinders in trains by small steam, gas, or electric locomotives. The cylinder door is then closed and the treating process is begun. The cylinders are provided with heating coils to heat the preservative, which penetrates the wood more readily when hot.

The pressure processes for the preservative treatment

(*Continued on page* 428)

Photograph by American Wood Preservers' Association

In this causeway and railroad trestle across Nueces Strait, Corpus Christi, Texas, timber treated for protection against marine depredation was used. The causeway alone contains 1,300,000 board feet of wood, all pressure treated with creosote, except the hand rail. Untreated timber in these marine borer-infested waters would last only two years, while it is expected this treated-timbered causeway will last thirty years

The site of Montezuma Castle—in the face of a sheer, chalk-colored cliff, poised between earth and sky like a fairy castle, in the Verde Valley of Arizona

Montezuma Castle

By Edna Townsley Pinkley

MONTEZUMA CASTLE, as it is called, although it is not a castle, nor did Montezuma ever dream of empires so far north, is built in the face of a sheer, chalk-colored cliff in the Verde Valley of Arizona, a four-hour trip by stage from Prescott. It is a true cliff dwelling, poised between earth and sky like a fairy castle; set in a recess so that overhanging rocks protect against harm from above, all avenues of approach are covered by loopholes, and the parapets of the balcony command the whole of Beaver Valley. It is a rare type, as most of the cliff dwellings of the southwest were built at the top of a talus beneath rugged overhanging cliffs.

Late excavation and exploration have thrown much light on the early life here. There is evidence to show that at one time a building even larger than the Castle occupied a recess in the same cliff. It is probable that by some convulsion of nature this whole building sloughed from the face of the cliff and crashed to the ground below, snuffing out the lives of many of its inhabitants.

Inspection of the Castle makes it evident that it was not

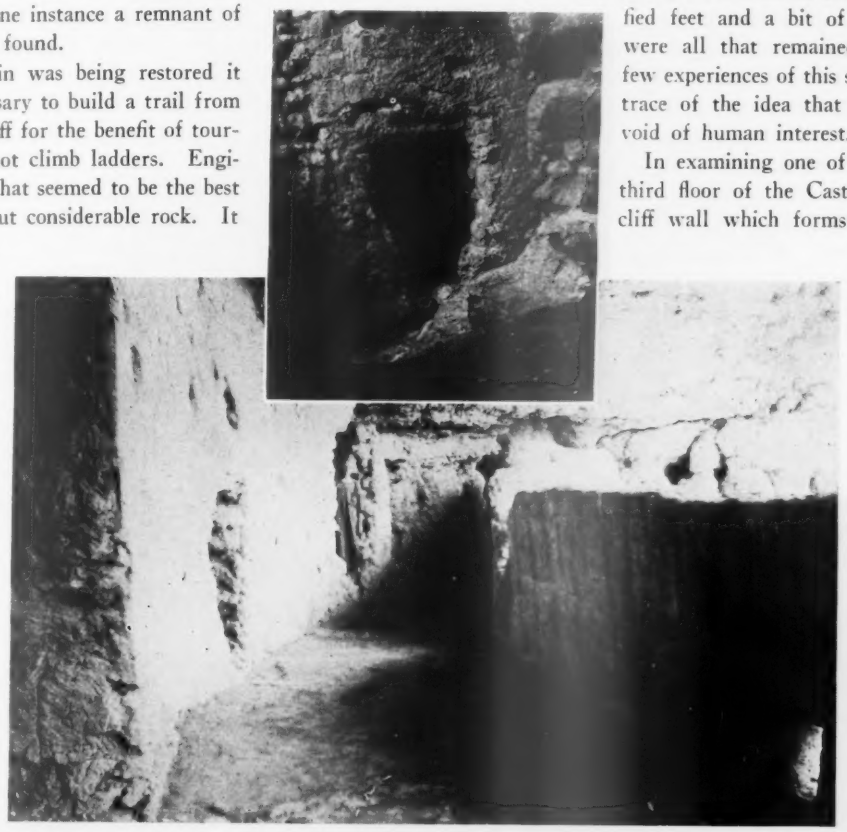
Incomparably beautiful was the reflection of the Castle in Beaver Creek—the coloring of the cliffs, framed by the intense blue of the sky and set off by the dark green branches of the sycamores

all built at one time, nor was the same general plan of construction followed. There are wide differences in the architecture and decoration of the various floors, rooms, wings and balconies. It is almost wholly built of rock and mud, roughly plastered together. Ceilings are made of straight cedar poles crossed with willow shafts and covered with grass and mud. In a number of rooms the ceilings are of bark and reed tied to the rafters with yucca thongs, making the effect purely ornamental, and in several cases the walls are decorated with designs carved in the plaster, presumably with a blunt tool. The doors differ in type and style, ranging from "tau" doors to small square holes, while in one instance a remnant of a reed door was found.

When the ruin was being restored it was found necessary to build a trail from the top of the cliff for the benefit of tourists who could not climb ladders. Engineers followed what seemed to be the best grade, blasting out considerable rock. It was during this work that the ruins of a rock watch tower were uncovered and indications that primitive engineers followed the same trail a thousand years ago were brought to light.

Several weeks each summer are devoted to repair and excavation at the Castle. Walls must be reinforced and new foundations planted. The excavation work is carried on in hope of uncovering further evidence of a forgotten race. The repair work is a simple matter of bracing a ladder with a rope and props, so that it hangs over the outside of a crumbling wall eighty feet above the ground, and applying a veneer of mud and rock to the outside as well as inside of the walls. Recently, work had to be done beneath a wall built on a sycamore log, which had decayed to such an extent that a new foundation was necessary. At another time a whole section of the wall had to be raised with a house jack, so that the foundation might be reinforced.

To many people ruins of prehistoric dwellings seem abstract in the extreme and totally devoid of personal interest. Such is far from the reality, as evidences of human nature, the same then as now, crop out on every occasion. Many interesting and touching things come to light through these excavations. A baby's arm bone was found with seven shell bracelets still clinging to it. Two mummified desert rats were found carefully buried beneath the floor of a room. Human hair was found tied with a yucca thong. A mill was uncovered on the ledge of a rock with a hole drilled through the ledge for the passage of meal. Husks of grain were found everywhere. The most poignant discovery, however, was the remains of a very young baby, the tiny skull about the size of an orange; two mummified feet and a bit of the cradle board were all that remained. It takes very few experiences of this sort to destroy any trace of the idea that archeology is devoid of human interest.



There is wide variety in the architecture and decoration of the various floors—of which there are four in the Castle. This is the main balcony of the Castle. There are many loopholes in the parapet, through which all avenues of approach by the enemy could be commanded. In the insert above is shown in detail one of the many interesting doors in this historic and fascinating dwelling place of the ancients

In examining one of the rooms in the third floor of the Castle a niche in the cliff wall which forms the back of the rooms of this part of the structure puzzled engineers at work restoring the ruin. Other niches could be easily accounted for, but this one was of such peculiar shape that it could not be linked with any useful service. Last summer, in repairing a section of the roof, it was necessary that several long timber beams be hoisted up the face of the cliff by pulleys and carried into the room of the strange niche. To get the beam through a small window to the place where it was to be used the workmen had much difficulty in maneuvering the beam into position because of the narrowness of the room. Finally, the front end of the beam was shoved through the small window and the back end rested on the niche in the rock wall without an inch to spare. It is quite evident that primitive ingenuity had come up against this problem and solved it once before.

Restoration work at the Castle was rendered additionally interesting by the fact that a few years ago a nationally

known structural engineer amused himself by computing strains and stresses of the Castle. He determined after several weeks that by all laws of engineering the walls should not have stood even when they were built.

The history of Montezuma Castle is particularly interesting because there is so little of it. The path of the early Spanish explorers and of the Padres lay far to the east in Arizona. No mention at all of these ruins is found until the Whipple report of a railroad survey in 1854, the year in which Camp Verde, three miles east of the castle, was established as an army post. In spite of the fact that the ruin can be seen from the camp, no mention is made in any of the several books written by army men of this period. The supposition is that live Apache Indians were of more absorbing interest to the soldiers than dead prehistoric men. General knowledge of this cliff dwelling came only with the establishment of a road from Prescott to Flagstaff.

Restoration work at the Castle goes steadily on for several weeks each summer, and amazingly interesting and personal relics of these forgotten peoples are constantly being brought to light through the excavations.

The Apaches near the ruin have a certain amount of superstition about it, as they do for all ruins. It is a general theory that this was a stopping place for a few centuries in the flight of a remnant of the Casa Grande people to the region to the north.

The name, Montezuma Castle, is a striking example of the mis-naming of such relics according to the prevailing idea that all prehistoric life in the southwest was of necessity, Aztec. As a matter of fact, both the Aztec and the Toltec cults stopped far south of the present Mexican line. The people who did inhabit this region in ancient times were unquestionably of Indian culture, and are known at present only by the Pima Indian name of Ho-ho-kam, the vanished people. The name was given to the Castle by native ranchers, and when it was made a National Monument the name was retained.

Montezuma Castle was made a National Monument in December, 1906, and is entitled to its position because it is the best example of its particular kind in the southwest; in fact, it is the best example in the world, so far as it is known, of a cliff dwelling built in the face of the cliff itself and not at the top of the talus. It is practically complete and in a good state of preservation. It is easily accessible to automobile tourists and is visited by thousands every year.

One reaches the Castle by driving sixty miles from Prescott over a delightful mountain road, or from Flagstaff, a pleasant six-hour trip through well-timbered forests. A good automobile road swings down the cliff to the foot of the ladders, and a camp ground, lapped by the waters of Beaver Creek, makes a delightful place to linger a while and to dream of the days when white men were unknown and the brown-skinned Indians, now long departed, swarmed through their airy castle.

MILLION DOLLAR CHECK SAVES WATERVILLE TRACT

On June 6, a check for $1,000,000 was mailed from the United States Forest Service for the purchase of the Waterville Valley Tract, in New Hampshire, as an addition to the White Mountain National Forest. Although the funds were drawn from the regular annual Forest Service appropriation for land acquisition, the provisions of the McNary-Woodruff Bill, authorizing Federal appropriations aggregating $8,000,000 for the purchase of National Forest lands during the next three years, undoubtedly made this purchase possible. This bill was sponsored by The American Forestry Association. No part of this appropriation will be available before July 1, but the National Forests Reservation Commission gave notice of its election to purchase the area some time ago, upon the likelihood of additional funds being made available. This will add 22,500 acres to the White Mountain National Forest, of which 800 acres are covered with virgin stands of spruce.

A view of the nursery of the Clearfield Bituminous Coal Corporation near Clymer, Pennsylvania, which in five years has increased its annual capacity from one-half million to two million forest tree seedlings

Wood *for* Coal

The Importance of Wood in the Mining of Coal is Manifested in the Forestry Plan of a Pennsylvania Coal Company

By Erle Kauffman

THERE is no subject upon which foresters are more generally agreed than the necessity for sustained yield in the working out of a perpetual timber policy. It embodies the very core of the forestry principle; it nullifies the discord in conservation by extracting the bitter pill of wood denial. If enough trees are planted for the trees that are cut down, there will always be ample timber for everybody; if industry will in a measure restore what it seizes from nature, that propitious old provider will always give unstintingly to industry.

One does not have to be tremendously well-versed in the mechanics of forestry to benefit from, or even recognize, this fact. Once any individual or industry has come face to face with the task of a continuous timber supply, the process of reaching out for policies and practices to insure a well-stocked woods for tomorrow's need is the order of the day. Thus the realization that forestry is more than a theory, the dawning that sustained yield offers probably the most direct route to forest regeneration and gain.

Typical area planted by the Clearfield Corporation in western Pennsylvania. These Scotch pines were planted in 1924 and the healthiest seedlings have reached a height of from four to six feet

Late in the nineteenth century, in

1883 to be exact, the Clearfield Bituminous Coal Corporation, of Indiana, Pennsylvania, began operations in western Pennsylvania. The business of this company was to mine coal, and it adhered strictly to its business. Nature had been wonderfully prodigal in her gifts to western Pennsylvania, catacombing the hills with mineral wealth and dressing the surface with great hardwood and softwood forests. Penn's Woods they were called, a region of rare primitive beauty that extended along the central Atlantic coast, encroaching on the very sea itself. An ideal location for the Clearfield Corporation to pursue its fortune. Here was the coveted ore; here, too, was the timber so necessary to its acquisition.

As sparks from wood-burning engines are considered an unnecessary menace to the woods, the Clearfield Corporation uses small gasoline motors such as are shown here for the hauling of logs

But as the years passed the Clearfield Company grew in stature and substance until it occupied a commanding position in the industrial realm of the state. Its holdings increased in area, its mines increased in number, and shafts were sunk deeper and deeper into the ground. Around its mining centers virtual cities emerged from a mass of timbers over night to house the men and equipment that are part of this immense machine for gutting nature's mysterious depths. Every sunrise saw men and machinery loading the black ore; every sunset saw giant locomotives hauling it away to turn the wheels of industry, or to warm the heart and body of mankind. A feeling of contentment settled over those behind the operations; prosperity hovered above like a protecting angel.

Then something happened. The arms of Penn's Woods, which in the beginning had hemmed in the company's operations and which had provided freely the lumber for buildings, cross bars, props, and ties, began to weaken under the march of prosperity. The woods that once fringed the mills were suddenly pushed almost to the horizon. Woodsmen began to complain of the scarcity of good timber trees; lumber, mine props, and ties became alarmingly inferior. Then the Clearfield Company came to the inevitable; face to face with the problem of an adequate timber supply, to meet the demand of its own particular industrial machine.

With thousands of acres under its control and enough coal in reserve for the next hundred and fifty years at an annual rate of two million tons, it was indeed to be expected that the corporation would readily turn to forest management with the eventual aim of sustained yield. So in the spring of 1920 a forestry department was organized, and a survey made of 24,000 acres available for reforestation. This survey indicated that less than 2,000 acres of virgin timber remained—16,000 acres with natural reproduction; 4,000 acres of barren land; 1,000 of semi-barren acres, and 1,000 acres in farm land. There followed a study of soil and site location of the various areas to determine just what could be done about it.

With this new knowledge gleaned from the various surveys and studies, the officials of the Clearfield Corporation began one of the most thorough and progressive forestry projects ever launched in the country by an industrial con-

These barren hillsides around the mines of the Clearfield Corporation at Clymer and Rossiter, Pennsylvania, have been planted with Scotch pine. About 4,000 acres of this type of land have been reforested since 1920

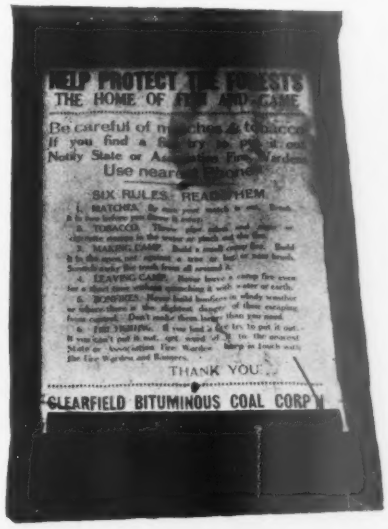
cern in that period. First, three forest areas, aggregating 21,200 acres, were selected and placed under intensive protection from fire. The Peale Forest, in Center and Clearfield Counties, and with an area of 15,000 acres, was the master area around which the chief activities revolved. Here, too, was the remaining stand of virgin timber, less than 2,000 acres. The Bigler Forest, of 1,700 acres, in Clearfield County, and the Patton Forest, of 4,500 acres, in Cambria County, were also designated and placed under protection. The remaining area was scattered in small tracts near the company's mines in Indiana County.

With a system of protection that involved chiefly fire prevention in the removal of hazards and the construction of rough fire lines, the Clearfield Company went about the business of planting its barren acres to trees and developing young growth on cut-over lands.

For the first planting 431,000 seedlings were obtained from the state nursery. These were mostly Scotch, Norway, white, and pitch pine, intermingled with Norway spruce and European larch. But the company was quick to realize that the limited supply available from the state nursery was far from sufficient to properly carry out an extensive planting project. There were several thousand barren and semi-barren acres of land that were idle; there were thousands of acres of cut-over hardwood forests where the softwoods must be planted. So in 1923 the Clearfield Corporation established its own nursery near the mining town of Clymer, in Indiana County, Pennsylvania. The capacity of the nursery at the time of its establishment was slightly in excess of one-half million seedlings yearly; but the Clearfield mines were becoming more extensive, the mine workings were projecting farther and farther into the ground, and the demand for wood was ever increasing. Thus five years after its establishment, the nursery at Clymer has become one of the outstanding forestry achievements in Pennsylvania. Under the direction of a technically trained forester the capacity of this nursery has grown from half a million seedlings yearly to two millions. Today the nursery at Clymer is stocked with seedlings enough to meet the immediate demand of other industries or individuals in the region of the Clearfield mines, and they may be obtained at a cost that makes their planting feasible.

Nor has the company been frugal in developing the seedling tracts at the Clymer nursery. In addition to varieties of pine, spruce, and larch which have been planted throughout its holdings, quantities of hemlock, walnut, cherry, cucumber, and Japanese larch are available for planting. Also, a goodly supply of seedlings for ornamental planting are in stock, among which may be found blue spruce, Austrian black pine, Japanese red pine, and American red pine.

During the past eight years more than three and one-half million trees have been planted. With only 2,000 acres of virgin timber remaining, and but 5,000 acres of merchantable timber at its command, the company is practicing forest management on 18,100 acres of cut-over land. Sixteen thousand acres of this is administered as second-growth hardwoods, planted throughout with softwood, spruce, and larch seedlings. Barren and semi-barren lands totaling 2,100 acres have been planted, chiefly to Scotch pine. At the present time all of the surface of the Clearfield Bituminous Coal Corporation, set aside for forests, is in all stages of development—from seedlings planted this year to fully matured timber.



This placard, which may be found in conspicuous places throughout the Clearfield holdings, reflects the spirit that is behind industrial forestry in the country today

Tree planting, however, is not the major part of the Clearfield forestry plan. In the Peale Forest fire lanes have been constructed and old roadways opened. A fire tower has been erected and connected with state towers by telephone. As a measure toward eliminating all fire hazards, the company uses gasoline motors to haul logs and ties over its woods railroad. The tracks penetrate the depths of the remaining virgin stand of white pine and hardwoods, and it is considered too great a risk to expose this area to the sparks from a wood-burning engine. As a further precaution, fire lanes have been constructed on either side of the track.

The cutting plan of the Clearfield Corporation follows closely the plan of eventual sustained yield. The virgin timber forms the source of the present mill supply. When this is gone the second growth will be ready for the mills, and there will be enough timber to supply the mines until the seedlings reach maturity. In the meantime, the cut-over lands will be planted.

The Peale Forest produces more than a million board feet of lumber yearly, of which fifty per cent is used for mining purposes and the other fifty per cent for new construction and repair work. Cutting in the woods is held, in the main, to a twelve-inch diameter limit for virgin pine, and a ten-inch diameter limit for hardwoods. Several seed trees are left on every acre cut over to insure natural reproduction.

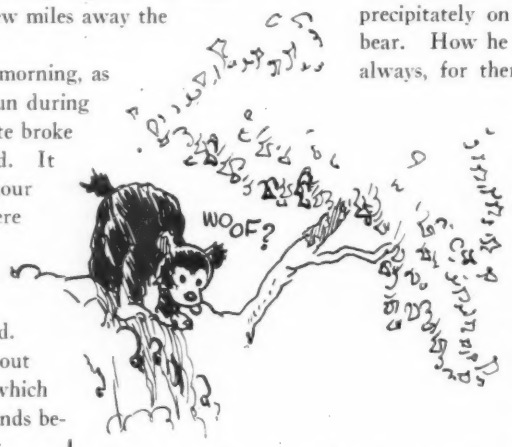
A survey of the wood used yearly by the corporation reveals the importance of this resource to mining. In 1925, an average year, operations of the Clearfield mines demanded 1,571,920 board feet of timber. Of this, 573,800 board feet went for mine ties, 693,850 board feet for cross bars, 193,422 board feet for small number, and 110,848 board feet for larger timbers. In addition to this, 1,558,119 linear feet of round and split props and 250,000 prop caps were used.

BY
WILLIAM M. MACE

Illustrated by Floyd Gottfredson

THE excitement began along toward the middle of the forenoon, on one of those characteristic dry-hot days of early July. From the sparsely vegetated surface of the Utah desert the heat waves shimmered until the unprotected human eye could scarcely face it. The cow-punchers on day herd were drowsing in the heat along with the long-legged Bar Z steers which they had trailed in from Houserock Valley, and which they expected to load at the railroad station but a few miles away the following morning.

All hands were sleepy this morning, as the cattle had made a little run during the night, when a mangy coyote broke out near the fringe of the herd. It had happened just at the hour when the trail-weary steers were quieting down for a snooze, and the stampede had brought out every man to help the regular night guard. This had taken several hours out of the puncher's short night, which on trail begins after dark and ends before daylight, cattle permitting.



According to experts, bears usually shun the desert. But one did not, and the story of its audacity won for William M. Mace, ranger on the Fishlake National Forest, Utah, second prize in the bear story contest for forest rangers conducted by The American Forestry Association.—Editor.

Jack Davis, who was rodding the outfit, rode out on the point of a low ridge overlooking the scattered herd. The cattle were lazily picking at the scanty forage under the more or less watchful eyes of the morning riders, and Jack dropped leisurely into the shade of his mount. He had no sooner made himself comfortable, though, when his eye caught sight of a dark object moving slowly through the shadscale on the lower end of the range. He watched idly for a moment, wondering if one of the steers had strayed or had been overlooked in the stampede that set the camp in a furor the night before.

Suddenly Jack came to his feet as though he had been prodded with a cactus spine, jerking at his two-gallon Stetson to shade his eyes. He jabbed himself in the most convenient spot with a four-inch, straight-shanked spur to convince himself that he was fully awake. Then with a single leap the puncher was spurring his top horse across the desert, shouting to his fellow riders and wildly waving his hat. He had identified the lumbering object as a bear.

One does not have to be a bear expert to know that ordinarily they do not choose to range on the desert at any season, and would in any event be expected to shun the low country during the hot summer period. Most all the bear stories ever told have been associated with the cool depths of the dense forests or the snowdrifts of high mountain ranges.

However, the animal which had brought Jack to life so precipitately on this hot July day was undoubtedly a bear. How he came to be there will remain a mystery always, for there was no natural bear range within a hundred miles. The only possible solution was that he was returning from a winter vacation in California or points south to his cool mountain retreat.

Nevertheless, there he was, and his appearance had transformed the scene from quiet somnolence to one of dusty commotion. It was quite like the showhouse at Hardscrabble when the shift is made from the local advertisements to the fourth reel of a thundering Tom Mix western.

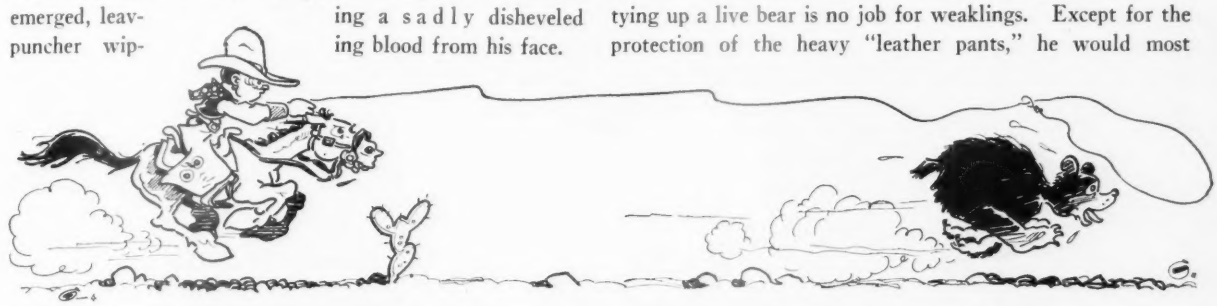
The other riders, galvanized into action by Jack's shouts, had by this time joined the impending chase and five streaks of dust were rapidly extending themselves in the direction of the bear. Steers were plumb forgotten in the exciting possibility of capturing a full-grown bruin alive. Not a gun was to be seen, for the modern buckaroo no longer packs a shooting iron while on regular duty. It is one of the things which is simply not done in polite cow circles. The coiled rope is referred to as a "gun" and is used with equal effectiveness as a weapon either of offense or defense.

When the bear saw the horsemen, with lariats ready for a "throw," bearing rapidly down upon him, emitting wild warwhoops as they came, he immediately bethought himself of the tall, uncut timbers from which he had strayed and immediately decided that he had made the greatest blunder of his life when he left them.

Can a bear run? In this particular cow country a legend

exists to the effect that he can outrun most anything that travels on legs, except, perhaps, a man scared by a bear. For a mile or more he had those crack cow ponies beat to a frazzle; but, being unaccustomed to such strenuous exertion in a temperature of 106 degrees, he soon slowed down. Jack had the lead on his fellow-punchers and made the first "throw," but his excited horse stumbled slightly and the loop did not hold. It held long enough, however, to upset the bear and confuse him to such an extent that he lost his bearings and headed directly toward the oncoming punchers. As he swung into Shavey's path, that aspiring young cattleman immediately decided that he would ring the peg or bust a latigo in the attempt.

But Shavey and his pinto were too busy at that moment to notice badger holes, and just as the loop was steadying for the throw, the horse put a front foot in a hole and the puncher landed right where the bear was going at about the same moment he arrived. For a few seconds the others could see little of the mixup for dust; then the bear emerged, leaving a sadly disheveled puncher wiping blood from his face.



"Can a bear run? Well, for a mile or more he had those crack cow ponies beat to a frazzle."

After this encounter the bear was about the most excited member of the party; every way he turned a yowling puncher headed him off. Finally a loop was put over his head and one front leg in approved rodeo style, and as one of the participants expressed it, there was "excitement aplenty." When the animal had hit the end of the rope in one or two swift rushes he lost most of his fright and began getting mad clean through. The rider, who was attached to him with a rope, began circling to give the other punchers opportunity to get in their ropes, so the unhappy animal could be stretched out life a calf to be branded. The rider was having a man's own job, though, to control his horse and still hold onto his rope. The pinto's nostrils were filled with "bear" and he had gone plumb "loco."

The other riders rowled their terrified mounts shamefully in an effort to get close enough to make a successful "throw." The bear meanwhile, tired of hanging back on the rope, tried the stunt of a mustang horse by making a sudden rush forward. Gaining a bit of slack by this maneuver, he darted sidewise, with such celerity that he collided with Tom's horse, a half-broke desert cayuse, which, true to his breeding, "swallered his head" and gave the puncher a ride that would have let him into the big money with the best riders in the business at the Pendleton Roundup.

In the meantime the game went merrily on with the rider who had successfully roped the bear getting mighty anxious for someone to help him get loose. Finally one of the men succeeded in noosing a hind foot and the bear was stretched in the brush. This indignity was a little more than his proud spirit could stand, and he fought with all the ferociousness of seventeen wildcats rolled into one. The other cow-punchers left their horses and attempted to do the hog-tying act while the other two held him steady. The bear had one front and one hind foot free and he managed to cut some fancy capers in spite of the ropes which held him. Before the seven hundred pounds of surcharged lightning was finally subdued the men put in a half hour of the most strenuous work they had ever done.

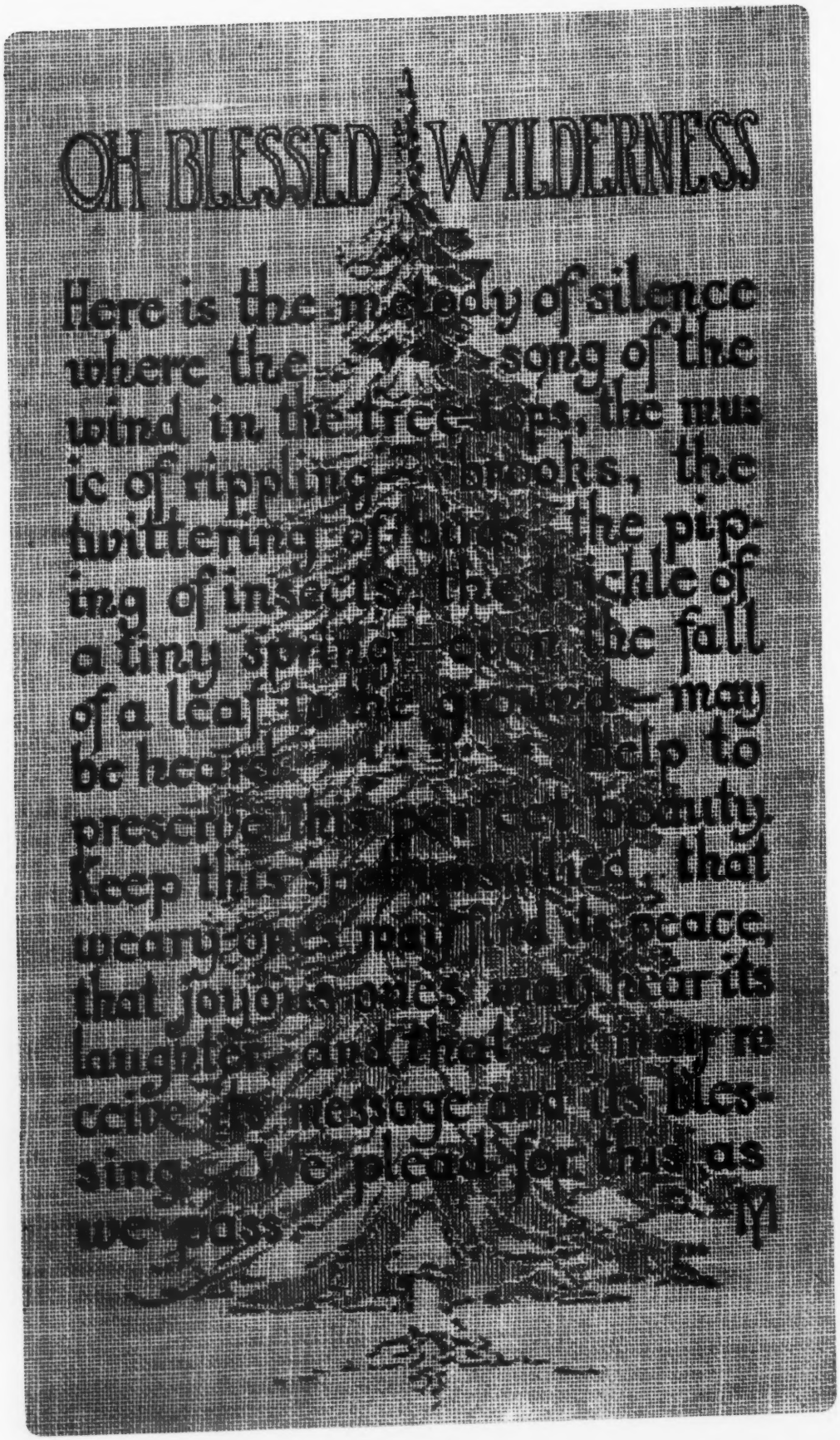
There were several casualties to shirts and overalls, and one of the boys received some war stripes on his chaps which he afterward exhibited as convincing evidence that tying up a live bear is no job for weaklings. Except for the protection of the heavy "leather pants," he would most likely have had an emergency trip to the hospital for repairs.

An improvised cage was secured from the railroad station and the bear placed in it, to the great astonishment of the natives, who were reluctant to credit the evidence of their own eyes. When bruin had recovered somewhat from his mauling he was shipped to one of the city parks, where he became an object of greatest curiosity because of the placard on his pen, which recounted briefly but very vividly the unusual story of his capture.

When they were gathered around the chuck wagon that evening one of the riders, in a smooth Texan drawl, gently chided the unfortunate young puncher whose horse had gone down at the badger hole.

"You might a-knowed better than to try to bulldog a muley that-a-way. You want to pick one with horns for that stuff," he said, and thereby started a round of ironic comment at the expense of the luckless puncher who mixed with the bear.

But they all agreed on one point, that one bear rodeo was enough. The decision was unanimous that they would all prefer to tackle single-handed the "pizenest red-eyed longhorn" that ranged between Scutumpah and Parashont.


OH BLESSED WILDERNESS
Here is the melody of silence
where the song of the
wind in the tree-tops, the mus
ic of rippling brooks, the
twittering of birds, the pip-
ing of insects, the trickle of
a tiny spring, even the fall
of a leaf to the ground may
be heard. Help to
preserve this rare beauty.
Keep this spot undefiled, that
weary ones may find its peace,
that joyous souls may hear its
laughter, and that all may re
ceive its message and its bles-
sing. We plead for this as
we pass.

Vacationing with a Hobby

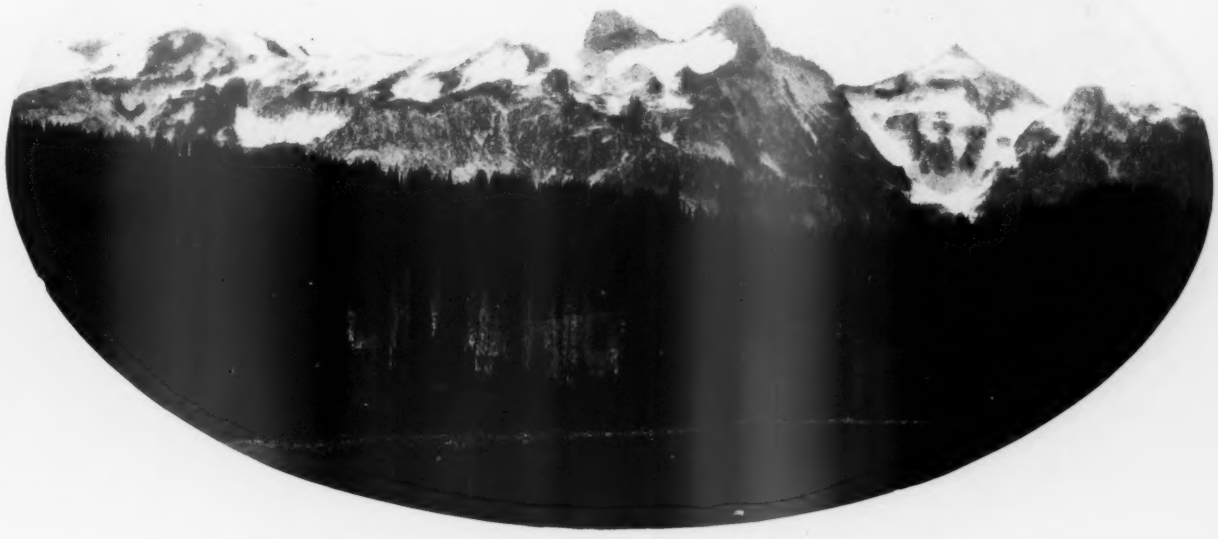
By A. W. Anderson McCully

FOR many years I have been made to feel that the moments I gave to my garden were stolen moments, so when the day came that I could have a vacation all to myself without danger of family censure, I decided to take my hobby with me. I wanted to hunt with a camera on Mount Rainier, not for great glacial masses of scenic grandeur, nor for the stealthy cougar or lumbering bear, but for the little glacial rills that trickled down the great rock precipices, for the broad meadows painted with the spectrum by nodding flower heads, and for the great spires of firs and cedars and hemlock. I wanted to trail the mountain junipers and heathers, even the tiny laurel of the northern mountains.

While my hobby and I had been brave enough to plan our little trip together, we did not have the courage to show the family what we put into our traveling bag. We had two pairs of mountain boots, one quite light with rubber heels and flat soles. The other pair was just about as stout as the shoemaker knows how to fashion, and in the soles were set sharp spikes—caulks, I believe they are called. We had several pair of woolen hose to wear with these in the high snowfields and glaciers. Of course there were sweaters in three weights and several flannel overblouses with high collars and long sleeves and a light sport skirt with a tweed knickerbocker suit.

I was not alone in following my hobby. There were many others, though most of them seemed satisfied to photograph the scenery

Our journey to the mountain began at Seattle. There is a splendid road all the way



Paradise Valley, in Rainier National Park, about eighty miles from Seattle, and with the Tatoosh Range in the background. A wonderful field in which to pursue a wild-flower hobby; for, as in much of this country, the foreground is a blaze of alpine flowers

As a rule the trails are well marked

to Paradise Valley and one can make the trip in luxurious automobile stages; but I must confess a liking for the click of wheels on the rails, and since I was adventuring to give vent to all my suppressed longings, I took the train. An automobile stage was awaiting us at Ashford and for an hour we followed a tortuous road winding through a magnificent stand of hemlock and cedar. We stopped at Longmire Springs to lunch at the National Park Inn.

Back in the stage again we climbed on and on, past roaring mountain torrents and foaming waterfalls. Finally we reached Paradise Valley and the famed Paradise Inn, having completely circled Mount Rainier since leaving Seattle, and reaching a point about fifty-seven hundred feet above the valley floor. We were still below the summer snow line, however. As soon as my hobby and I were settled at Paradise Inn we communicated with the Government naturalist to find out what trails we were to follow, where grew the finest bloom, and what about Mr. Bear and Madame Cougar. He assured us that bears had a habit of running at the first sign of humanity and that the cougars ranged in their stealthy way at night.

Early the following morning we swung off down the Paradise Valley trail, a steep drop through wooded meadows of nodding flowers. The Paradise River came tumbling through this narrow valley and provided us with our first trial at crossing raging water over a wet and slippery log. About midway we began to careen wildly, but by sheer good management and some excellent work on our hands and knees we gained the other side without mishap. Then a stiff climb up over a remnant of a trail and we were well on our way to the beauty of Reflection Lakes.

It was noon before we reached the first of the lakes. All around were snow-crowned peaks, and beyond the lake towered Mount Rainier's great ice-covered dome that is estimated to radiate more volume and area of ice than any other peak in the temperate zone. The glacial surface alone covers more than thirty-two thousand acres. It makes pleasant watching for a midsummer noon under a blazing sun.

A picturesque shelter for the Summer hobby-chaser on the lower slopes of Mount Rainier

A passing forest ranger stopped to talk with us. He seemed just a little skeptical of the bloom in which we reveled, directing us to a region beyond the second lake, where flowers painted the whole mountainside in a strange mixture of color. After rounding the second lake we were startled by the sheer drop at our right. Far below in the wide meadow surrounding Lake Louise were several scattered tents which, from the top of the world, seemed but tiny specks. There was a good trail down the face of the butte, lined with small flowers. Eventually we stood at the edge of the lake and looked up at the mighty precipices

Along the foamy stream—The gay mimulus clings to the water's edge

that rose up all around. One great pinnacle in particular seemed to rise in a perpendicular face of solid rock for at least a thousand feet. It was awesome.

At midafternoon a smoke haze rolled over the great peaks, blotting out the backgrounds. For several hours there had been not the slightest trace of humanity. The trail was growing fainter and we had difficulty in following it. Then our landmarks were suddenly lost in the deepening smoke haze and we were conscious of the fact that we were bearing more pictures. We had used all of our films anyway. The trail suddenly died out on a great boulder-strewn slope. Patches of snow lay everywhere. High to our right towered a cliff. The haze drew in on all sides. The light was growing fainter and our courage was keeping pace with it.

And then, as we looked upward, we saw a horse silhouetted high on the cliff above us. For an instant he stood poised on his hind legs at the cliff's edge, then wheeled and disappeared beyond the horizon. That horse gave us cheer

Broad meadows painted with the spectrum by nodding flower heads, vivid colors brilliantly brought out by the great, dark spires of the trees—firs, cedars and hemlock—the landscape offered literally an orgy to the wildflower lover

much too far to the north to bring us back to Paradise Inn.

Several hours later, after twice retracing our steps to keep to the dwindling trail, we took desperate counsel with ourselves. In the coming darkness we were sure that it would be impossible to recross the raging stream, nor would it be safe to attempt the treacherous trail to the valley below. We had no matches to build a fire if darkness should catch us alone in the mountains, which was certain to happen if we turned back. Rather breathlessly we pushed on.

There followed a grilling hour. We did not attempt and sent us trudging doggedly on, for we knew that where horses range men were rarely far behind.

Then at last a welcome trail sign was found far up the boulder course. It did not direct us to Paradise Valley, but it was reassurance that we were going somewhere. We lost little time with the switching trail on the loose cliff, but set our heels and skimmed the sliding earth and rock. We gave up the idea of trying to keep our feet long before we reached the bottom.

We grew dimly conscious of an added note in the roar

(*Continued on page* 430)

Why Fish Do Not Always Bite

By E. C. Fearnow

ONE reason why fish "bite" is that they become hungry and desire food, although there are instances when fish take the bait when they are not feeding. The pugnacity of some species causes them to strike at objects that get in their way. Feeding is governed to a great extent by temperature changes, and it is well known that fish are more or less inactive when the water temperature is low, requiring little food at such times. During the winter months they take practically no food. In low water temperature they frequently huddle together in deep water where they find protection from sudden changes of temperature.

Some species of fish are inactive in high water temperatures, and in some instances the same species may refrain from taking much food in both high and low water temperatures. Fish that require cool water often collect in congenial places in lakes and streams, as such places afford them whatever food is necessary. Under these circumstances fish will not bite so readily. This also explains how fish can be present in great numbers and refuse to take the bait.

Fish do not feed throughout the day, so the time of day, like weather conditions, has as much to do with their feeding habits. Frequently they gorge themselves with food which lasts them for a day or more. After showers that wash into streams a variety of food it is not probable that the angler will get so many bites.

While there are times when fish are well fed on a certain kind of food, another kind would be more enticing. The angler, therefore, must change the lures with the view of finding one that will be accepted and bring results.

That fish do not bite is not always evidence that there are none in the stream or lake. It may often mean that the water is ideal for fish in that it contains a variety of desirable foods and that the bait is lost among so many other objects at which the fish may bite. At such times the angler's skill will be taxed to find some unusually attractive lure.

The success of fishing is not to be measured by the number of fish caught. While an occasional bite followed by catching a few nice fish adds interest to fishing, many anglers go home satisfied without even landing a fish, knowing that the fish were in the stream. The sight of a big fish in the water gives the true sportsman about as much thrill as catching it.

"And so on lakes and streams and brooks
The good Lord fashioned fishing nooks."

Some years ago the writer fished below the spillway of the Gatun Dam, Panama Canal. The swift, clear water on the concrete apron contained hundreds of big fish arranged in almost perfect rows. They would not touch the bait even when dangled right in front of them. These fish were probably gorged with food, as the concrete work at the base of the dam was literally covered with shrimp. But sportsmen seemed to find great pleasure in angling for these fish, even though the possibility of catching one was very remote.

Some time ago a forester on one of the southern forest reserves which is noted for trout fishing, and where the angler is required to pay a fee of a dollar a day for fishing, stated that the streams of the forests were full of rainbow trout but that they were hard to catch. "The sportsmen," he said, "take the view that the fish got the best of them and go away satisfied." Perhaps it would be a good thing if we had more fish in our streams capable of holding their own against the wily angler.

But sometimes fish are just finicky and will not bite, and the reason why remains one of those unsolved mysteries that forever fascinate the man with a reel.

A Mexican Industrial Romance

The Remarkable Story of Guayule, a Desert Shrub with a High Rubber Content

By GEORGE F. WEEKS

IT was Baron von Humboldt, the great German traveler and writer, who said that Mexico was the most wonderful of Nature's storehouses of treasure. He did not mean only gold and silver, but the wide range of other natural products required to meet the demands of humanity. If an impassable wall were erected around Mexico's exterior boundaries, he said, it would be found that included within its limits was every possible product required to meet the needs of human life. It would not be necessary to call upon any other portion of the world for anything whatever. And, as time goes on, the century and a quarter that has elapsed since the great explorer came to this conclusion has furnished proof of the well-founded character of his judgment.

Besides the wonderful natural resources which were brought to his attention, there were others of which he did not dream. Notable among these was the desert shrub growth known as Guayule (*Parthenium Argentatum*), which first received notice in the United States about the middle of the last century, although it seems certain that the natives had been aware of its qualities as a rubber producer for an indefinite period, ascribed by some to the Aztecs, or even their forebears. At all events, it was a matter of common repute among the owners of domestic animals in the region where the plant is found that those animals should be prevented from grazing on it, since an almost certain result was the accumulation of spherical masses of solid rubber in the intestines to such an extent that death frequently ensued. It is a fact, observed by the writer during his connection with the Guayule industry in the State of Coahuila, that there is some quality in the leaves and smaller stems of the plant which attracts animals, notably mules, horses, and cattle, and they will eat it eagerly whenever afforded the opportunity. Wagon trains have come in from the desert to the railway shipping point loaded with the baled shurb, which had been eaten down to the heavy woody stems by the animals that obtained access to it during the night after camp was made. Much valuable weight was lost in this way, especially when the shrub was worth, as it then was, $150 a ton at the factory.

This is the way the Guayule shrub, or rubber plant, of the Mexican desert looks when it is first baled for shipment

It should be explained, by the way, that in the Guayule plant the rubber is not contained in the latex, as in the *Castilloa Elastica, Hevea,* and other trees from which the gum is extracted. It is found in place in tissue-like layers between the outer bark and the woody portion of the heavier stems. The entire plant, however, seems to be permeated with it, as shown by the success of the natives in extracting the rubber by masticating the tenderer portions of the growth.

The earlier methods of reduction only secured from ten to twelve per cent of the shrub in rubber, but more improved devices increased this to as high as eighteen per cent, while a number of reports have been published of even larger returns.

As stated, the natives, especially children, living in the Guayule region were accustomed to manufacture balls of pure rubber for their sports by holding what may be called "chewing bees." Quantities of the shrub were gathered, after which the youngsters sat in the shade and proceeded to chew the leaves and smaller stems, in due time each producing a pellet of pure rubber. These were then pressed and molded together until a globe of sufficient size was secured. It has been stated as a fact, and with apparent good foundation, that the first successful mechanical device for extracting the rubber from the shrub was originated by a foreigner who had observed this practice on the part of the natives and who developed it in that direction. Therefore, the devices and processes in general use are nothing more than the process of mastication upon a large scale, with the application of steam, hot water, and sometimes chemicals.

This occurred in the early part of the present century, and from the time of the perfection of the mechanical processes

A Guayule plant in bloom. In this desert shrub the rubber is not contained in the latex, as is usual in gum plants, but lies in tissue-like layers between the outer bark and the woody portion of the heavier stems

until the height of the revolutionary period of 1913 and the immediately subsequent years the growth of the industry was rapid. Many reduction plants were established, and many thousands of tons of rubber were produced and exported. The price of Para and plantation rubber at that time was high, and the manufacture of Guayule was productive of large profits, as also the gathering and shipping of the shrub from its desert home. Large fortunes were made by those owning tracts of land containing the shrub and which frequently had cost them no more than five or ten cents an acre, having been regarded as practically worthless because of its desert character.

By the time the revolutionary period had reached such a stage as to permit operations to be resumed the price of tree rubber had reached so low an ebb that there was no inducement to resume the production of Guayule. But later, under the manipulation of the foreign rubber combination, prices again began an upward course. The former producers of desert rubber again resumed operations, and for some time there has been a steady and constant increase in the harvest of the shrub in the production of rubber.

The habitat of the Guayule shrub is the desert region of the elevated plateau which constitutes the greater portion of Central Mexico, and comprising the States of Chihuahua, Coahuila, Durango, Nuevo Leon, San Luis Potosi and Zacatecas, with perhaps some in Tamaulipas. It is also found in portions of southwestern Texas, notably in the "Big Bend" region of the Rio Grande, where a factory has been in successful operation for several years. The growth seems to be confined to a belt beginning at about 2,500 feet above sea level and extending to 6,000 feet. The writer has noted certain areas where the plant is abundant and where the delineation of the limits of its growth at both elevations was as plain almost as though the handiwork of man. For the most part, the plant is found in sandy, rocky and gravelly soil, of a limestone formation.

In the pre-revolutionary period, when the industry was at its highest stage of development and new sources of supply were sought everywhere, the question arose as to the age of the shrub that was being gathered and treated. That is, how long a period must elapse for a sufficient supply of the rubber to be secreted by Nature, in her effort to protect the life of the plant, before the gathering and reduction thereof. Upon inquiry from the Indians inhabiting the region, it was learned that a certain tract of several million acres in the State of Coahuila had been swept by a devastating prairie fire some twenty years previous. The Guayule, being highly inflammable because of its resinous properties, had been necessarily and entirely destroyed. This had been followed, slowly enough, by a renewal of the vegetation of various kinds, including the Guayule, but which, as with all desert growths, was of very slow development.

Experience, too, demonstrated that under certain conditions a second growth ensued in regions already harvested, and that in five or six years it attained a fair size. But experience also demonstrated that the new growth did not possess sufficient rubber content to make it profitable enough to handle. Hence strict orders were sent out by the various reduction plants that no second-growth shrub would be accepted under any conditions. So it appeared reasonably well demonstrated that the profitable stage of rubber secretion under natural conditions was from eight to twenty years.

A crude but effective press for the baling of Guayule, and the method most commonly used by the natives

The natural habitat of the Guayule shrub is the desert region of the elevated plateau which constitutes the greater portion of Central Mexico. It is also found in the "Big Bend" region of the Rio Grande. In harvesting Guayule for transportation to market—sometimes over a hundred miles from the nearest railway point—camps are established. In gathering the shrub the entire plant is usually taken, along with the major portion of the root system

Sufficient time has now elapsed to enable experts to determine with a fair amount of accuracy the exact minimum and maximum of time needed for the plant to obtain full productive powers.

In gathering the shrub, the entire plant, which as a rule is from two to three feet in height, is taken along with the major portion of the root system. A small mattock is used for loosening the roots, and many rootlets are thus left in the soil. If suitable weather conditions prevail, a second growth will result shortly.

In the processes of gathering and baling the shrub for transportation to market, sometimes over a hundred miles from the nearest railway point, camps are established, and here great quantities are brought from the tributary region to be pressed into bales. When such a camp is finally abandoned, a heavy growth springs up from the seeds that have been scattered. Within a short period the young plants cover the ground like a mat, but they are too crowded to attain suitable size for profitable handling.

At first the rubber extracted from Guayule found a market at about one-half the price of the tree product, and it was used for many purposes where it could take the place of the higher priced material. But with improved processes of refining and treatment, the quality of the output has gradually been raised, accompanied by a corresponding relative increase in price, until now it is stated that for all purposes it is possible to place Guayule rubber on a par with any in the market.

The last stage—packing Guayule rubber for shipment. In five months of 1926 5,054,563 pounds of this rubber was exported, at a market value of $2,141,761, while the production is increasing constantly

While the Guayule in-

(*Continued on page* 448)

The Importance of Forests to Social Welfare

By Glenn Frank

At the recent Wisconsin Commercial Forestry Conference held at Milwaukee a great amount of interest was evidenced in an address given by Dr. Glenn Frank, President of the University of Wisconsin. Because of this interest and the important and varied phases of forestry it reflects, Dr. Frank's address is reproduced here.—EDITOR.

THERE are, I think, five definite contributions that forests have to make, that the conservation movement has to make, toward the social welfare of the people of Wisconsin.

First, a reforestation movement will train the people of the State of Wisconsin in co-operative effort as no other single movement in the life of this state that I can think of can train them. All the forces of the state must come together if conservation is to move out of the stage of conversation.

Second, a reforestation movement will contribute to the social welfare of Wisconsin by stabilizing and diversifying the economic life of the state. It is obvious that if these now idle acres were covered with forests, and if we were really as far along as we should be in research in such fields as cellulose and colloid chemistry, not only would the lumber industry be much greater, but a hundred and one by-product industries would lend a new element of stability and would extend the diversity of the economic life of Wisconsin in an untold manner.

Third, the reforestation of our idle acres would be a very great sanitary asset, a health-giving agent in the life of the state. Not only would the great forests of the future give rest to more tired brains, but it would insure our pure water supply, since pure water supply requires uninhabited forested watersheds. Southern France, before they planted pine forests, was a very unhealthful region. Since they have planted pines in southern France that region has become a health resort. And in our own country we have many examples of the sanitary contribution that forests have made. The planting of the eucalyptus trees transformed the sanitary conditions and health conditions around Rome.

Fourth, a reforestation movement will bring, in increasing measure, to this state the priceless boon of beauty. I have no hesitation in speaking of beauty at a commercial conference, because a commercial nation that forgets beauty will ultimately find the foundations of its commerce disintegrating.

A little while ago I walked down the main street of a little village in Missouri and I saw, with a sense of pain, the barbarities of design that disgrace the average American small town. House after house in that little village was so ugly that accident might have been its architect. I recalled, as I walked down the main street of the little Missouri village, the eloquent and exquisite beauty of the little French villages I had driven through the summer before, on the way from Paris to Chartres. I am sure there is just as much hunger for beauty in that little Missouri village as there was in any peasant community of medieval France, but somehow in medieval France they built equisite little cottages, while in the small towns of America we run up galvanized iron shacks and call them shops.

A people cannot allow beauty to become the exclusive possession of antique dealers and bored millionaires without sooner or later facing a reckoning. We do not want America to become the songless country that the Irish poet and dramatist, Lord Dunsany, tells about in one of his little imaginative tales.

"The poet came unto a great country in which there were no songs," says Dunsany, "and he lamented greatly for the nation that had not any little foolish songs to sing to itself at evening.

"And at last he said, 'I will make for them myself some songs, so that they may be merry in the lanes and happy by the fireside.' And for some days he made for them aimless songs, such as maidens sing on the hills in the older, happier countries.

"Then he went to some of that nation as they sat weary with the work of the day, and he said to them, 'I have made you some aimless songs out of the small, unreasonable legends that are somewhat akin to the winds in the vales of my childhood, and you may care to sing them in your disconsolate evenings.'

"And they said to him, 'If you think we have time for that kind of nonsense nowadays, you cannot know much of the progress of modern commerce.'

"And then the poet wept, for he said, 'Alas, they are damned!' "

I give you this whimsical touch from Dunsany to emphasize the fact that beauty is not a thing that can be bought by a rich nation. You cannot forever go into antique shops and sponge off of the sense of beauty your ancestors had. Beauty cannot be bought by a rich nation; beauty is something that is born in the soul of a radiant people!

Now, beauty is not just something to hang on the walls; beauty has a very intimate relation to the social content and social discontent of a commonwealth. I shall never forget a dramatic little incident that happened just outside my apartment in New York several years ago. I had started out of the door of my apartment house for my office, when a garbage wagon turned the corner. The horses slowed down to an almost imperceptible walk. The driver turned in the seat, holding the reins with one hand, and with a reverent carefulness lifted from one of the garbage cans a half dozen almost fresh yellow tulips that were, I suppose, the discarded reminder of some brilliant dinner party the night before. I thought I could sense a glow on the garbage collector's face, as he laid four of these yellow tulips on the seat beside him and flung the other two to a hungry-eyed little girl who was watching him from the sidewalk.

Four men and a woman stopped to watch that little curbstone drama, and I think it was worth watching. It had more to say to the people of New York than many of the plays that were playing to crowded houses on Broadway. Here was a man who, in the midst of collecting garbage, loved beauty and shared it. As I watched that garbage collector, I found my faith in democracy, which I admit is a bit shaken now and then by the news, strengthened. The outstretched arm of that garbage collector, reaching for yellow tulips, seemed to me that morning a symbol of mankind's universal hunger for beauty, and I felt that as long as there is something in men that will make them search for beauty, even in garbage cans, it is safe to assume that they can, if given a real chance, make democracy work, for I am certain that such men would rather reach for yellow tulips than for either the sword of war or the firebrand of social revolution. I thought, as I watched that garbage collector, that I saw how radicals are made in a democracy, and I framed in my mind a definition of a radical: A radical is a garbage collector who has never found yellow tulips in his cans.

Social unrest always finds its readiest recruits among men who have never been able to extract joy from their jobs or from their environment. It is an old observation that hungry men turn radical, but what we are likely to forget is that men with full stomachs may still be hungry with "a hunger not of the belly kind, that is banished with bacon and beans," but with a gnawing hunger for the things that make life free and adventurous and abundant. Maybe the statesmen have overlooked beauty as a campaign issue; for men do not revolt against a government that is making their work and their lives and their environment beautful. Beautiful homes, beautiful factories, beautiful offices, beautiful cities, beautiful landscapes, beautiful relations in business and industry; a community and state and national life that stimulate and satisfy men's hunger for beauty—these are the things that turn the energies of mankind from the ruin of revolt into the radiance of creative living. I suggest that beauty is better and cheaper than the big stick as an instrument for maintaining law and order and contentment and satisfaction. That a reforestation policy in the State of Wisconsin can make possible vast areas of beauty in which the soul of Wisconsin can continually renew itself is by no means its smallest contribution to the social welfare of the state.

Fifth, an intangible but very real contribution that forests can make to the social welfare of Wisconsin is this: the trees in the forest can be wonderful teachers for us in those moments when we fall into the habit of sticking out our tongues at each other and thinking that we have solved our public problems when we have called each other radicals and conservatives. There is nothing in the world that can teach us the real truth about radicalism and conservatism as a tree can teach us, if we will let it.

I make that observation in the light of these vivid paragraphs from the Journal of Thoreau, the sage of Walden. He was meditating on some marvelous elms he had seen that morning, and this is what he wrote in his Journal:

"They battle with the tempests of a century. See what scars they bear, what limbs they lost before we were born; yet these elms never adjourn. They steadily vote for their principles and send their roots further and wider from the same center. They die at their post, and they leave a tough butt for the choppers to exercise themselves about and a stump which serves for their monument.

"They attend no caucus; they make no compromise; they use no policy. Their one principle is growth. They combine a true radicalism with a true conservatism. Their radicalism is not cutting away of roots, but an infinite multiplication and extension of their roots under all the surrounding institutions; they take a firmer hold on the earth in order that they may rise higher into the heavens.

"Their conservative heartwood, in which sap no longer flows (I hope the conservatives won't take this to heart too much!), does not impoverish their growth, but is a firm column to support it, and when their expanding trunks no longer require it, it utterly decays. Their conservatism is a dead but solid heartwood, which is the pivot and firm column of support to all of this growth, appropriating nothing to itself, but forever, by its support, assisting to extend the area of their radicalism. Half a century after they are dead at the core, they are still preserved by radical reforms. They do not, like men, turn from radicals into conservatives. Their conservative part dies out first, their radical and growing part survives."

I wonder if it is too much to hope that some day the American people may realize this highly intelligent relation between the spirit of conservatism and the spirit of radicalism inside the invididual, inside the state, and inside the nation—these two great forces of thought and progress, forever in conflict, but in the deeper sense, coöperative forces in the evolution of the American social order!

A General View of the Magnificent Trees Facing Toward the Garden and

The Trees of Mount Vernon

Here, at the Home of Washington, America's Colonial

By MARY SARGENT

"EXPERT, save that tree!" is the modern version of the famous appeal to the woodman now in the hearts of many New Englanders who are concerned over the condition of the junior Washington Elm. For the last "son" of the historic tree under which Washington is said to have assumed command of the first American Army now droops sadly on Cambridge Common, near the site of the mother elm, where it was transplanted by Vice-President Dawes in 1925. Every possible effort to prolong the life of the tree has been unavailing, and recently Ernest H. Wilson, of the Arnold Arboretum, pronounced the elm's condition hopeless. But there is still hope that the line will not become extinct, for several plants taken from the junior elm are still alive.

he Garden and Crowning the Sweeping Green Lawn at Mount Vernon

ernon---*The Nation's Shrine*

's Colonial History is Kept Alive Through Her Trees

SARGENT POTTER

This incident recalls a similar one a few years ago when the original Washington Elm died. The Cambridge authorities had tried so valiantly to keep the tree alive that they were loathe to admit defeat, even when all signs of life had vanished. Finally, Professor Charles Sprague Sargent, late director of the Arnold Arboretum, declared the tree was dead, and it was cut down. Thus passed one of the great landmarks of New England. The Washington Elm was then cut to pieces and distributed among the natural history Museums, historical societies and schools of the country.

When Professor Sargent was asked by the Board of Regents to go to Mount Vernon to propose a plan of restoration, he studied Washington's journal thoroughly, so as to have authority for the work which he

recommended. The estate had indeed entirely lost its early character, and Professor Sargent set to work to restore the place to its original appearance—not, however, without strenuous opposition from those well-wishers who objected to what appeared like destruction of natural beauty. Sentiment was sacrificed, but not historical veracity, and he uprooted from the lawn overlooking the Potomac "memorial trees" to Bishop Lawrence, of Massachusetts, and to the late Mr. J. P. Morgan, of New York, because of their inappropriateness in a restored Mount Vernon. The specimen dedicated to the late Emperor of Japan as a mark of national respect and friendship was not uprooted, but transplanted to the border of the estate.

This is one of the native Holly trees in which Washington was especially interested. There are now thirteen large specimens standing at Mount Vernon. The tallest of these is thirty-eight feet high and has a trunk diameter of one foot at breast height

Next came the cutting away of many trees which had sprung up since Washington's time, in order to open the vistas between house and river which gladdened the eyes of our forefathers. Washington himself spoke of standing in the west doorway, and seeing West Lodge Gate. Consequently this, as indeed every vista he mentioned in his papers, was opened according to his precise account.

The exquisite simplicity of the tomb which was built from Washington's own plans is enhanced by a grove of cedars, exactly as he wished to have it. Cedars do well in this particular locality, and as the visitor enjoys their protection and looks upon that touchingly plain monument, he feels anew the immeasurable dignity of simplicity, which truthfully interprets greatness.

The work of cutting and clearing prepared the property to assume its original appearance. From this time on no planting was allowed except as it existed in Washington's time, just as no building can be erected except on foundations laid down at that period. Only in the case of the flower garden have modern flowers been introduced in mid-summer to supp'ement the spring and fall growth, which were the only plantings known in Colonial days. The arrangement of the vegetable garden, as outlined in the diary, has been restored exactly

A Weeping Box at Mount Vernon. The extreme care with which Washington recorded in his diary plantings and improvements in his gardens and on the estate prove his sincere interest in arboriculture. And the great variety of specimens shows how eagerly he reached out to complete his collection

as it was. Two willows have been planted, as originally, on mounds on either side of the entrance gate, and in order that they should not die as the first did, because of the dryness of the soil, a system of tiles was installed, set on end and filled with water to provide the necessary low and damp bed. The willows are now flourishing, and should continue to do so for years.

Any trees which have died or which have been blown down, as has happened from time to time, have been replaced by trees grown from seeds or from cuttings of the original trees. In this way perpetuation is assured; for trees, like all living things, have a cycle of life which, even in the absence of disease or disaster, comes to its inevitable end. Even the magnificent tulip trees will probably not last another hundred years.

At the present time, however, there are standing fifty-seven trees, which, according to their size and position, were planted by Washington or during his lifetime. The large trees, especially the oaks, which are shown on the plan obtainable at Mount Vernon, were probably growing during Washington's life. But as he makes no allusion to planting oak trees, and as these trees are native to the region, there is a probability that they were self-sown.

Of the trees unquestionably planted under Washington's personal direction, the tallest are the handsome tulip trees, or Yellow Poplar, three of which are still standing. They are straight, tall trees, the tallest of them reaching 120 feet. There are coffee beans, ashes, lindens and honey locusts. The latter, although fast growing, is not a long-lived tree, and as it produces great quantities of seeds which germinate readily, it is not improbable that the large trees now at Mount Vernon have sprung up naturally from seeds shed by a tree planted by Washington or his brother Laurence. Washington's interest in this tree is shown by the fact that on March 23, 1786, he planted, according to records in his diary, "between 17,000 and 18,000 seeds of the honey locust."

Here, at the side of the house, Washington planted the Pecan given him by Thomas Jefferson, who was the first to distribute living plants from the Mississippi Valley to the Eastern States. The original plantings on the estate are being protected and replaced in a plan of restoration

Another of the trees actually planted by Washington himself and so recorded in his diary on March 25, 1775, is the great old Pecan that crowns the hill in front of the mansion. The vista down the Potomac from this point is exceedingly beautiful

The seeds from which the buckeye trees were grown were gathered by Washington in September, 1784, near the mouth of Cheet River, in what is now West Virginia, and were planted by him in April of the following year. To botanists these trees are of greater interest than any other plants at Mount Vernon. The species naturally have yellow flowers, but the Mount Vernon trees have red, pink and flesh-colored flowers. Trees with flowers of these colors have been looked for in vain in the Appalachian forests, and except at Mount Vernon are nowhere known to exist.

Horse-chestnuts, elms, maples and beeches are among the commoner species of American trees found on the place. The pecans, however, of which there are three, termed by Washington in his diary "Mississippi," or "Illinois" nuts, were planted, according to the diary, on March 25, 1775, and are, therefore, as far as we know, the oldest trees planted by him. In addition to this fact, these trees are of great interest, as they were given to him by Thomas Jefferson, who in 1784 first published a technical description of the tree in his *Notes from Virginia* and who first distributed living plants from the Mississippi Valley to the Eastern States. Washington's interest in the English or French walnut is shown by an entry in the diary, which states that on September 15, 1763, he "planted English walnuts in eleven holes on the west side of Garden 22," and on March 28, 1770, he "planted three French walnuts in new garden and on that side next to work house." On February 9, 1785, he "transplanted English walnut trees from corner near where the old schoolhouse stood to the upper side."

The meticulous record of the improvements on his estate portrays not only his careful habit of recording facts, but a sincere and painstaking interest in the great science of arboriculture. Locusts, mulberries, sassafras, redbuds and dogwood are all trees which flourish in that locality and which are represented by one or more specimens.

A tree often mentioned in Washington's diary which betokens special interest is the native holly, and there are now thirteen large specimens of this tree standing at Mount Vernon.

Washington mentions the planting of Serbus trees, probably the English Service tree. They were the first to be planted in this country, and of these only one remains near the northwest corner of Bowling Green. The tree is thirty-one feet tall, and is failing rapidly. There are many hemlock trees, three white pines, and nine red cedars. The last entry in the diary relating to trees has to do with these cedars. "On Saturday last the dead cedars in my shrubberies were replaced by live ones, just taken up."

There are three healthy and handsome box trees, apples, pears and cherries, and one Cedar of Lebanon near the summer house. When several exotic trees, known only since Washington's death, were removed from Mount Vernon, this cedar was left. The earliest record of lilac planted in this country, though they must have been growing 100 years before, are those planted by George Washington.

The last tree ever planted by him was a magnolia, a species of which he was extremely fond. On May 21, 1785, the diary records that he had received plants of the large magnolia of South Carolina, and on November 18, he put them in the greenhouse for the winter. On the following April 6, he "transplanted forty-six large magnolias of South Carolina," and two days later he again transplanted many large magnolias. On May 2, 1786, he "planted seed of the large magnolia, or laurel of Carolina, in boxes near the greenhouse." Of these magnolias planted by Washington only one remains. Thirty feet of the trunk was destroyed in the gale of September 28, 1896, but, though misshaped, the tree is in healthy condition and will probably live for many years. Many of these southern magnolias have been replanted.

So the trees of Mount Vernon stand as living witnesses to Washington's love of nature and pride of home. It is the only instance in the world where a great man's home and property have been preserved as they were during his lifetime.

One liberty only has been taken. Washington desired intensely to have a hedge of English hawthorne on his place, mentioned it often in his journal, and makes a note of having planted it. But Washington, apparently not knowing that it takes two years for these seeds to come up, deemed his venture unsuccessful and dug up the seeds at the end of the first year when they failed to appear above ground. And so, under the direction of Professor Sargent, the hedge of English hawthorne was planted for him, and there it grows today.

TO THE MEMORY OF JOHN BURROUGHS

By CATHERINE PARMENTER

In the pathways of heaven—
I see you walking there,
The sunlight softly falling
Upon your snowy hair.

A wood thrush sings a welcome
In a burst of melody,
A squirrel chatters shrilly
From the bough of a tree.

Great hemlocks lift their branches
High against the azure blue;
And all the baby spruces
Stretch forth their arms to you.

In the pathways of heaven—
I see you walking there,
The sunlight softly falling
Upon your snowy hair.

EDITORIAL

The Stone Face Smiles

THE Old Man of the Mountain has cause to smile. His estate—Franconia Notch in the White Mountains of New Hampshire—over which he has held silent reign for unnumbered years, has been saved from dismemberment and destruction. On June 1, the six thousand acres embraced in the Notch passed from private to public ownership, thereby stamping success upon the efforts of the State of New Hampshire and the Society for the Protection of New Hampshire Forests to preserve for all time the beautiful wooded valley which forms the mountain setting of the Great Stone Face, made famous by Hawthorne and now an object of national homage.

The campaign for the public acquisition of Franconia Notch was announced in the January issue of this magazine. It was pointed out at that time that unless the Notch property could be placed under public ownership the natural beauty of the region was endangered by its acquisition by lumber interests. The sum required to purchase the property amounted to $400,000, one-half of which had been appropriated by the State of New Hampshire. The Society for the Protection of New Hampshire Forests undertook to raise by public subscription the other half needed. This task was made less difficult than might otherwise have been the case by a gift in the will of the late James J. Storrow, which made available $100,000 to be used in the discretion of the Society. This sum the Society decided to apply to the purchase of Franconia Notch and in January launched a campaign to raise the final $100,000.

Announcement of the fact that the sum had been fully subscribed was made last month, and on June 1 formal transfer of the property to the state and to the Society took place. Under the terms of this transfer all of the property excepting about one thousand acres in and surrounding the Flume was deeded to the state. The Flume property, however, was deeded to the Society, to be operated and administered by it for a period of twenty years, at the end of which time the state is to have final title.

It is said that over 14,000 people participated in raising the final $100,000 required to consummate the purchase. This bespeaks the widespread love and admiration in which the Great Stone Face, or, as it is better known, The Old Man of the Mountain, is held by the people of the east. There is probably no other point of interest in the White Mountains that draws so many people during the summer months. It is indeed a Mecca for hundreds of thousands of motorists during the months of June, July and August. And they are well repaid for their pilgrimage, for with faces uplifted and eyes fixed upon the immutable profile, they see through the veil of time the rugged, determined character of the New England pioneer and beyond—the Soul of the Master Sculptor.

In preserving the natural environment of this shrine that is more than historical, The Society for Protection of New Hampshire Forests has rendered an immeasurable service to this and future generations.

Up to the Public

PASSAGE by the Congress just ended of two major forestry laws is striking evidence of the breadth and solidity of the forest sentiment which prevails in the country at the present time. Ten years ago such an accomplishment would have been impossible; twenty years ago, the idea of asking Congress to pass two fundamental pieces of forestry legislation at one session would not even have been attempted. And yet the measures enacted by the Seventieth Congress—the McNary-Woodruff Act and the McNary-McSweeney Act, both of which were reviewed in the June issue of this magazine—were passed by large majorities and with relatively little opposition.

It is worthy of note, also, that there was no dissension over any of the provisions of either bill on the part of the forest conservationists or the supporting public. The only real obstacle encountered by either bill was the economy bunker which lies between the take-off on Capitol Hill and the home green at the White House. This proved more serious for the McNary-Woodruff bill than for the McNary-McSweeney measure. Legislative leaders of the former had

to accept a curtailment in the program advocated for forest acquisition in the east, while supporters of the forest research measure were compelled to give assurance that the full amounts authorized would not be immediately asked for, but would be stepped up to over a period of ten years. As passed, however, both measures assure greatly enlarged activities by the Federal Government in the establishment of National Forests in the east and in forest research in all the principal forest regions of the country.

Of equal importance is the fact that these two acts supply missing cornerstones in the foundation of a Federal forestry policy that must meet the nation's future demands for wood. Thirty-seven years ago the first stone of the policy was laid when the act creating the Federal forest reserves in the west was passed. The second stone was placed in 1905 by the act which transferred these reserves to the Forest Service. Then came the Weeks Act, authorizing the Federal Government to acquire lands in the east for National Forests. In 1924, the Clarke-McNary Act added another stone by making possible cooperation on the part of the Federal Government, the states, and private timberland owners in forest fire protection. The two laws just passed thus round out a forest policy long in the building, but which now gives ample authority by law to the Federal Government to move forward along all major lines of public forestry.

How fast the government can move remains to be seen. It has often been said and with great truth that laws alone do not grow trees. Let no one be fooled by the assumption that the legal framework for a Federal forest policy solves the forest problems of the present or the future. Nothing is further from the facts. Most of these laws are operative, so far as forest upbuilding is concerned, only as Congress from year to year votes the appropriations authorized. A wide-awake, aggressive public eternally pounding upon the doors of Congress demanding what the laws contemplate is the dynamic force needed from now on to write ultimate success into our Federal forest policy.

Forestry and the Airplane

NOW that sky history has been written in the drama of ocean flights and spectacular performances miles above the earth, it is time to think about planning for the practical and profitable use of the airplane. These daringly achieved records of the past year, the original purpose of which was to impress upon the world the significance of the day and to demonstrate the power of American courage and engineering ingenuity, promise to degenerate into promiscuous rainbow chasing. Unconsciously, the world has been entangled in the meshes of lure for thrill and fame, with fortune as an added attraction.

Fortunately, there are simple and effective means of utilizing this new talent and courage, and our foresters would do well to fashion their future plans around them. Aerial photographs may eventually supplement, if not replace, cruising maps. Insect areas will be located and treated from the air, while the aerial speedster will become the nemesis of forest fires.

Recently an unheralded pilot flew more than eight hundred miles over the Peninsula State Park in Wisconsin, fifteen feet above the tree tops, and released sixteen thousand pounds of calcium arsenic dust. The "stunt" was in no way spectacular. Brass bands and hand-shaking did not figure in the event. Yet it required all the finesse of flying and the ingenuity of engineering that accompanied Lindbergh's unforgetable ocean flight. This bit of air drama cost Wisconsin $5,035.05, but it checked, in one-tenth of the time required by ground operations, an invasion of the destructive hemlock spanworm over 3,733 acres of mature hemlock trees.

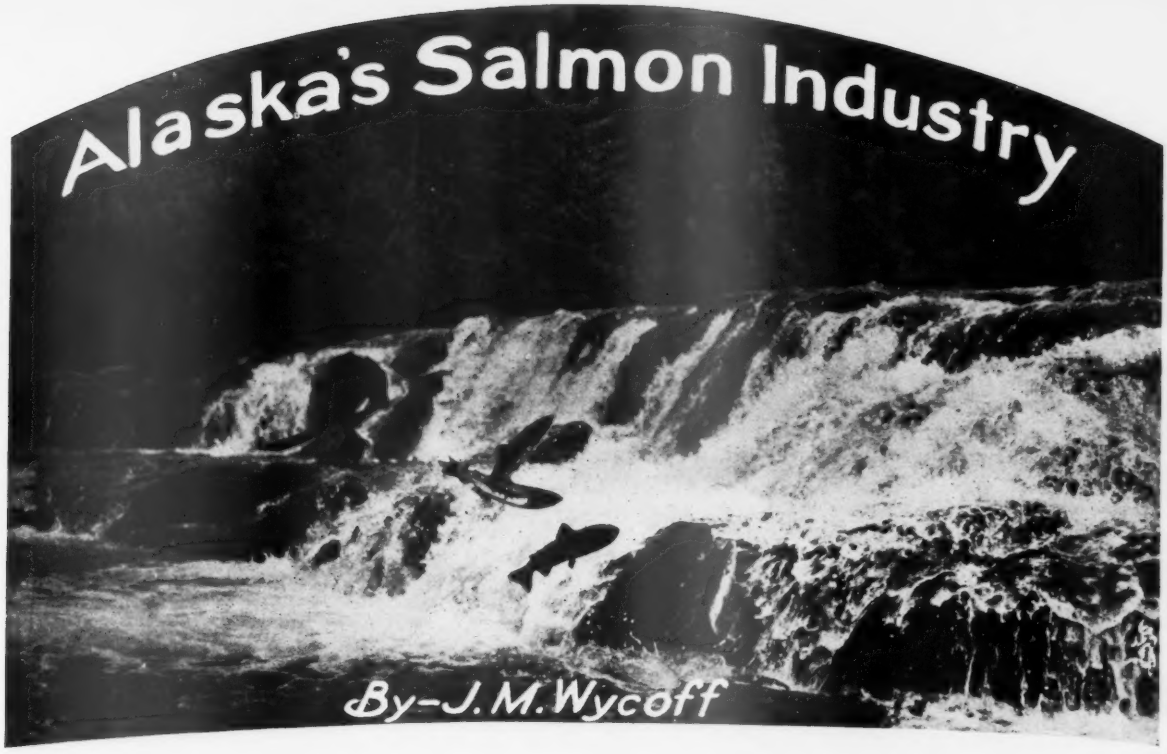
The 1928 program of the Royal Canadian Air Force in civil operation for government departments include among other things for the intensification of aerial fire patrol over 40,000,000 acres of forest lands in Alberta, Saskatchewan, and Manitoba, and twenty hours' flying time for emergency fire periods in British Columbia. The Force has also been assigned to photographic surveys in the Nelson River watershed in connection with pulp and paper development, and in the Saskatchewan patrol area in order that base maps may be prepared for use in additional aerial forest fire patrol.

Thus, the Canadian Government seems convinced that the airplane is both practical and profitable in carrying out its forestry developments. Every year new strength is added to this phase of its work with such outstanding benefits that the day is not far away when the graceful, droning machine will supply short cuts to adequate forest management and administration.

Our own country, while still in the grip of the spectacular, and dreaming dreams of new air glory, is demonstrating the usefulness and practicability of air crafts in all lines of endeavor where speed is a prime factor, with the exception of forestry. Half-hearted attempts to formulate aerial tactics into a forestry program have apparently discouraged this development to such an extent that the plane has not passed the auxiliary stage in our forestry plans.

The airplane is now playing a major part in our mail system, commerce, and industry, through farsightedness and sheer courage. Its development in this respect, though without public acclaim, has been about as spectacular as have been the ocean flights and other stirring achievements. It has passed, to some extent, the experimental stage and its practicability and profitableness are demonstrated in its increasing use. It typifies the trend of our civilization to eliminate the time-consuming way of doing things in favor of direct and speedy results. If complete forest restoration and proper forest preservation are to be achieved by a generation, our foresters must think and act with that generation. The airplane has given this generation a momentum that speeds it to accomplishments hitherto undreamed. There is no reason why it cannot give forestry the same momentum.

Alaska's Salmon Industry



How the Southeastern Corner of Our Northern Territory Catches and Cans Most of the Salmon Offered on the Markets of the World

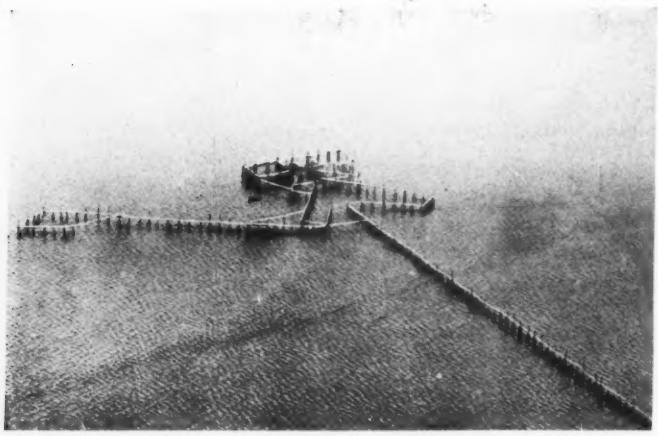
CATCHING and canning the several varieties of salmon has long been a big industry on the Pacific Coast from Oregon to the Bering Sea. But with the gradual depletion of the fish supply around Washington and British Columbia, this unique industry has moved, to a great extent, to southeastern Alaska. Today the bulk of the canned salmon placed on the markets of the world is caught and canned in that region. Ketchikan produces more canned salmon than any other city in the world.

While many of the canneries in Alaska are on patented land in or near the cities and towns, the majority of them occupy areas within the Tongass National Forest. These areas are held under special use permit renewable from year to year upon payment of a low rental fee. A number of years ago the Secretary of Agriculture promulgated a regulation whereby cannerymen were given opportunity to secure patent to improved cannery sites. While some owners have taken advantage of this regulation, there are at present a number who continue to pay the annual rental charge for the use of the land.

In the early history of the salmon canning industry the principal method of capturing the fish was by means of seines and gill nets. Today it is safe to estimate that ninety-five per cent of the salmon caught in southeastern Alaska are taken in either standing or floating traps. The standing trap is constructed by driving piles and hanging thereon the cotton web and wire netting which form the lead and walls of the trap. The floating trap is built of logs lashed and bolted together and also hung with cotton web and wire netting to form the lead and walls. While there are many variations in the dimensions of these traps, they are laid out to follow a general form. First, the lead of netting is fastened to shore and extending out at right angles to a suitable distance where the fish are led to the trap proper, consisting of a heart, pot and spiller, where the fish are finally impounded and captured.

Perhaps the first known fish trap is that formerly used by the Indians. They selected a rocky beach close to the mouth of a salmon stream and gathered up all the rocks from a circular area and piled them along the rim, forming a bowl of perhaps 200 feet in diameter and two or three feet deep. When the tide came in the bowl filled with water and the fish swam up around the mouth of the stream awaiting a favorable time to ascend. When the tide receded the fish that had not gone upstream collected in this bowl, and at low water it was an easy matter for the Indians to wade in and harvest their catch. While this method fulfilled the Indian's need, it cannot be used commercially, due to present-day Federal regulations.

In preparation for the canning of the hordes of fish which seek their spawning grounds during the summer months, the canneryman has a real job before him. First, he must assemble a crew, get the pile driver in commission, and make necessary repairs to his docks, floats and buildings. Scows

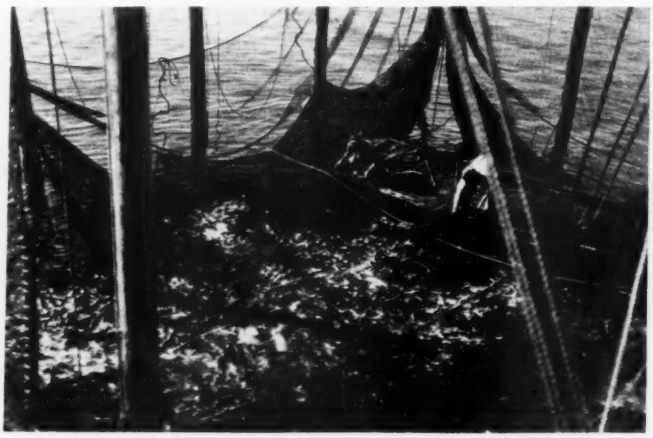


A standing type of salmon trap at Ikatan Bay, Alaska. Ninety-five per cent of the salmon caught in southeastern Alaska are taken in either standing or floating traps

must be overhauled and all floating equipment put in order. This work usually starts early in March. By April the number and location of the traps have been determined. The next step is to secure from the logger, if not available from the old stock, the necessary piling or logs with which to build the standing and floating traps. For each trap there must be sufficient wire and cotton webbing cut and made up to fit designs of certain dimensions. The lead, heart, pot, and spiller constitute a "suit of clothes," in the vernacular of the webman.

If a standing trap is to be driven, soundings are taken to determine the high tide depth along the different parts of the trap and the approximate depth of mud, sand, or gravel. The piles are then ordered, varying in length according to location, from sixty feet close to shore to one hundred and forty feet on the face or outer end of the trap.

Powerful tugs propelled by internal combustion engines are owned and operated by the canneries. With driver, crew, piling, and other necessary equipment, the tug proceeds to the site selected for the trap. And here is where the trouble begins. If you were trapping squirrels, it would be a comparatively easy matter to construct your trap and set it, but fish traps are placed where the fish run on the more exposed stretches of coast line. The location may be five or ten miles from a safe harbor. About the time the first pile is placed, the ocean begins to get rough and the work as rough, or rougher. Striking a pile with a 2,500-pound hammer with the ocean lifting the driver on top of a ten-foot swell is not child's play. So when these swells begin to break and the engineer is standing up to his knees in water, a pile is lashed horizontally to the driven ones and the crew seeks safety ashore. The man who juggles seventeen soft-boiled eggs without breaking one is a novice compared to the seadog who can stand on the pile driver landing in a running sea and, with a three-pound hammer, hit where he looks. The storm rages perhaps a day, perhaps a week or ten days, and all the



"Pursing" the spiller of a standing salmon trap in Alaskan waters. The web is lifted to force the fish to the surface and the slack then tied to the pot scow in the trap

while the outfit is waiting a chance to resume work at an expense of around $250 per day. An average size trap can be driven and lashed in four days, but there are numerous locations where, during stormy seasons, the crew remains on the ground ten days or more without being able to drive a pile. After the trap is driven, four or five calm days are required to properly place the web.

The floating trap frames are built in protected harbors on flat beaches, and here the web, or "gear," is placed in position on the frame. The frame is then towed to the selected site and anchored in position and the lead buoyed with various kinds of floats onto a cable running to shore. If the weather is favorable, the floating trap is towed to its fishing site in a day or two; but often the boat is a week or more making a trip of thirty or forty miles. Due to the fact that the weather has less influence on the construction of the floater, it is expected that the fisherman and canneryman will even-

Brailing a standing trap. The fish are brailed into scows or onto the decks of the sturdy trap tenders. The independent trapman is pretty sure of a market for his fish

tually abandon the driven trap, except in a few cases where, for reasons patent to the trap owner, a standing trap is more desirable in spite of the expense of driving.

By July the trapman has managed to get everything in shape for the run of "humps," "dogs," "cohoes," and "sockeyes," if you know what I mean. A cabin is built on shore close to the trap, or on the trap, and two men are hired to "watch" trap. Among their many duties are those of keeping the trap free from drift logs, kelp, sharks, sea lions and pirates. Pages could be written on the duties of a trapwatchman. However, suffice to say, it is no lark.

A "fish pirate" is one who robs a trap of the fish caught in it, and his depredation is a warm topic of conversation each season. The trap owners organize against pirating by hiring fast motor boats to patrol the waters at night.

While all the preparation is being made to catch Mr. Salmon, the cannery is at the same time busy making

This is the "floating" type of salmon trap, equipped with living quarters for a watchman. High-powered motor boats patrol the waters cautiously at night to guard against fish piracy

A seine boat making a good haul near Ketchikan, Alaska. The salmon industry operates over 100 canneries to catch and can 5,000,000 cases of fish annually

cans in which to pack the finny food. Canneries are known in the trade as one line, two line and three line. That is, a one line cannery has one complete set of machinery to cut, can, seal and cook the fish. A two line would have two sets of "lines" of machinery; a three line, three sets, and so on. The expected pack is based on the number of cases each line will turn out per day. Cans are made to fill the maximum pack.

The canner of fruits and vegetables in the continental United States, while no doubt operating at considerable expense, has few business hazards compared to those taken by the fish canner. Fast transportation, variety of fruits and vegetables, ready markets in small lots, and a degree of certainty in being able to determine the available crop in advance of canning, all make for a reasonable degree of success in preserving farm products. But in the salmon canning business the canneryman must make all his preparations without knowing where the fish crop is, when it will come, how big it will be, or what part or section of several thousand miles of coast line it will hit. The fish canner must prepare an outlay of traps, gear, transportation equipment, and canning equipment representing an expense of hundreds of thousands of dollars, before he has one cent of return on the investment. The canning crew is hired and put to work at making cases and other odd jobs several weeks prior to the anticipated run of fish. They are paid on contract for a specified number of cases. If the run of fish fails to materialize, they must be paid for what they could have done.

While the general practice has been for the canneries to put out a sufficient number of traps to normally catch all of the fish they want to can each season, the field has been entered by a steadily increasing number of private trap owners. The independent trapmen find a suitable location and get their outfit together at their own cost or on a share with a canner. If the independent trapman is partly financed by a canneryman, he is sure of a market for his fish. If he is totally independent, he will make a contract for delivery to a can-

A "one line" cannery on the Tongass National Forest. The large motor ship brings and unloads supplies for the industry and then takes on a cargo of canned salmon

nery at the market price or take whatever chances he may have on the open market in the principal fish centers.

The first salmon pack in Alaska was put up in 1878 and consisted of 8,159 cases. The banner year was 1918, when the total pack of 134 canneries was 6,677,569 cases. The total pack for all of Alaska from 1878 to 1925 was 101,217,499 cases. The pack for 1926 was approximately 6,000,000 cases.

About once every blue moon we read an article by some writer who, on a tourist ticket, has investigated our salmon canning industry and found it in a deplorable state. I remember one journalist who deplored the fact that "outside capital cans the fish and they ship it outside to be eaten." Yes, we have outside capital interesed in our canneries. We're glad of it. We need it. The population of Alaska is about 60,000. This handful of people has not all the funds necessary to carry on such gigantic business as that of operating over 100 canneries to catch and can 5,000,000 cases of fish. There are forty-eight pound cans to a case of salmon, and unless a good portion of it is shipped outside, every man, woman and child in Alaska would have to eat 4,000 pounds each year. Ye gods!

There has been a yearly discussion and controversy between the proponents of seine fishing and of trap fishing, and between the conservationists and anti-conservationists concerning the possible depletion of the salmon supply in Alaskan waters. Prior to 1924, the action taken to preserve the supply was half hearted and not altogether consistent. Beginning with the season of 1924, however, an earnest campaign of protection against the depletion of the fish supply was begun. The most effective clauses in the newly promulgated regulations are those creating closed areas within the different packing zones and the establishment of certain periods or seasons within which fish may be taken for canning. The opening and closing dates for these seasons vary with certain geographic features which affect the time the salmon approach the inland waters on their way to the spawning grounds. In addition to the closed season, the seines and traps are prohibited from fishing a certain number of hours each week. This latter closing feature is of doubtful value in allowing the escapement of large numbers of fish to their spawning grounds.

Fishing Nooks

By EDGAR A. GUEST

"Men grow weary," said the Lord,
"Of working for their bread and board.
They'll weary of the money chase
And want to find a resting place
Where hum of wheel is never heard
And no one speaks an angry word,
And selfishness and greed and pride
And petty motives don't abide.
They'll need a place where they can go
To wash their souls as white as snow.
They will be better men and true
If they can play a day or two."

The Lord then made the brooks to flow
And fashioned rivers here below,
And many lakes; for water seems
Best suited for a mortal's dreams.
He placed about them willow trees
To catch the murmur of the breeze,
And sent the birds that sing the best
Among the foliage to nest.
He filled each pond and stream and lake
With fish for man to come and take;
Then stretched a velvet carpet deep
On which a weary soul could sleep.

It seemed to me the good Lord knew
That man would want something to do
When worn and wearied with the stress
Of battling hard for world success.
When sick at heart of all the strife
And pettiness of daily life,
He knew he'd need, from time to time,
To cleanse himself of city grime,
And he would want some place to be
Where hate and greed he'd never see.
And so on lakes and streams and brooks
The Good Lord fashioned fishing nooks.

—(From "Just Folks," copyright 1917. Reprinted by special permission of the publishers, Reilly & Lee, Chicago).

It has been the writer's opportunity, through the line of duty taking him over a large area of fishing ground, to observe the run of fish in all its stages, from the time they first reach the inland waters until they have spawned and died. From the very beginning it was obvious that the "closed to fishing" area was a success. Fish which had apparently run the gauntlet of twenty-five or thirty traps reached the bays and inlets leading to their spawning ground and were not molested by seiners. It is doubtful if there is on record any other single Federal act which has done so much for the preservation of our food supply as this one.

The transportation of materials used in putting up the annual salmon pack is no small problem. The tons of wire webbing, cotton webbing, tin, rope, and other equipment necessary are brought from the States. Tons of food supplies are needed for the cannery crews. Many of the crews must be brought from outside. To accomplish this the steamships are taxed to capacity. The freighting of the finished product to the States and the return of the crews keeps the steamers busy until late in the fall.

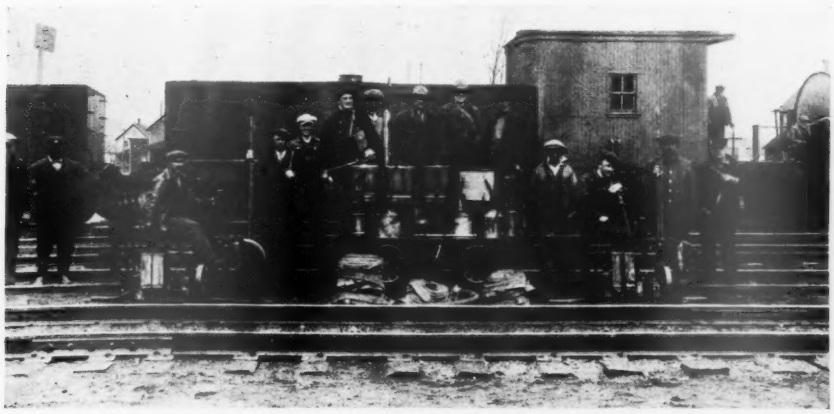
The logs and piling entering into the construction of fish traps, the lumber used in repairs and construction of canneries, and the boxes used to pack the cans are products of the Tongass National Forest. The logging camp and sawmill production are gaged by the activity in the salmon business. A floating trap requires about 50,000 board feet of uniform size spruce logs. A standing trap requires from sixty to one hundred and forty hemlock or spruce piles varying in length from sixty to one hundred and forty feet. Thousands of feet of spruce lumber are used annually for construction of canneries. With hearty cooperation between the fishers and fish packers and the Federal administrators of the conservation policy, Alaska will produce the bulk of the world's supply of salmon for many years to come.

A Mountain Railroad Arms Against Forest Fire

How the New York Central is Equipped for Forest Defence

By S. A. Seely

COMPARATIVELY few people who enjoy the beauty of the forests from a Pullman window or an observation car are aware of the efforts made to protect and preserve the forests, especially by the railroad company over whose tracks they are riding. This is especially true in the Adirondack Park, in New York, where the Adirondack and Ottawa Divisions of the New York Central Railroad operate more than 200 miles of single track. It is a typical mountain railroad, with the usual complement of grades and curves that are necessary to penetrate this territory. The country is thickly wooded, and at certain seasons of the year, especially in the summer months, the greatest precautions are necessary. A fire once beyond control becomes a serious menace, not only to the forest, but to the communities.



A fire crew of the New York Central, equipped with fire torches and pumps, ready to combat the deadly cigarette and cigar of the railroad tourist

To guard against such a disaster, the Railroad Company has adopted means of fire protection and prevention. In co-operation with the State of New York, the one hundred-foot right-of-way has been cleared of logs, trees, stumps and brush, and each spring is burned over by fire patrolmen equipped with torches and fire pumps. The work is done under the direction of a State ranger. Then throughout the summer, at regular intervals, the right-of-way is patrolled and kept entirely clear of inflammable material.

A telephone dispatching circuit, used in connection with portable field telephones, furnishes a means of quick communication with train dispatchers at all times. Commercial telephones are available to communicate with rangers and fire wardens.

Five fire-tank cars are located in this division, each consisting of a 7,000-gallon tank, mounted on a steel frame flat car with a fire pump, 1,000 feet of one and one-half-inch hose, shovels and other equipment for fighting fire. The pump is

Ready for the "red peril." Testing a steam-operated pump mounted on a steel flat car. These giant tanks each carry 7,000 gallons of water

operated with steam from the locomotive. Portable lightweight gasoline pumps, equipped with 500 feet of hose, are located in the tank cars. These are mounted on a light framework designed to be handled by two men and furnish a means of providing a hose stream from any convenient brook or adjacent water supply.

A fire patrol is maintained with one or two patrolmen on each section. The division is divided into twenty-nine sections. The patrolmen are provided with velocipede cars, each equipped with a fire extinguisher, collapsible pail, shovel and fuses. Oil-burning locomotives are operated in this territory from 8:00 a. m. to 8:00 p. m. during the fire season. Coal-burning locomotives are allowed to operate from 8:00 p. m. to 8 a. m. subject to approval of the State Conservation Department. The front ends and ash pans of locomotives are screened. As the company attributes the throwing of lighted cigarettes and cigars from the train a dangerous fire hazard, all passenger trains are equipped with vestibule coaches and all outside doors are kept closed. All windows in smoking cars and compartments are screened. Signs are placed in conspicuous places, and train employees caution all passengers.

Every employee of the railroad company in this area has certain duties to follow in the event of a forest fire. Their duties are also carefully outlined as to the prevention of fires, and these instructions are printed in the employees timetables, with one of which each employee is provided. Since the fire protection and prevention program has been put in effect only minor fires have occurred, and no fires whatever have been caused by locomotives.

The Story of Blackwater Canyon

By FRANKLIN W. REED

IN THE story told by this picture there is hope for our 83,000,000 acres of fire-swept forest lands. Not all of them are damaged beyond repair. Nature is kind and will restore them to productivity, if we will play our part and accord them the protection from fire which is their due.

This West Virginia canyon originally carried magnificent spruce and hemlock, forty thousand feet, or more, to the acre. Some fifteen years ago the lumberman, with his switchback railroads and steam skidding devices, harvested the crop for our hungry city markets.

He had, perforce, to cut the forest clean. The slopes were so steep and rocky that the logs must literally be lifted with steel cables up to the cars on the tracks above them. The trees were uniformly overmature, and any left by a selective cutting would inevitably have blown down and contributed to the cumulative waste in the next high wind.

Then negligence allowed fires to sweep through the slashings, destroying all vestige of the little spruce seedlings waiting abundantly for a chance to grow, and reduced the land to a blackened waste. In 1914 there was no green thing upon it. The abandoned railroad grades made staring white scars across the seared face of the mountain, and a few gaunt skeletons held up their naked arms in mute appeal to a pitiless heaven.

The Blackwater Canyon, which is again a scene of natural beauty, and growing another crop of timber to serve industrial needs

Then came the United States Forest Service and the State Forest Department, which hand in hand, have since kept fires out of the canyon. Nature reseeded the slopes, and today we find a new and thrifty young forest of valuable hardwoods, of which the lordly yellow poplar forms no small part.

The Blackwater Canyon is again a scene of natural beauty, and, moreover, is growing another crop of timber to serve our industrial needs in the years to come. The case of the Canyon is outstanding, as fire prevention alone in this instance has replaced forest devastation with forest productivity.

A Priceless Heritage

By Eben G. Fine

BOULDER, COLORADO, a little city of 15,000 people, enjoys the distinction of having the largest acreage of municipally owned mountain park lands of any city of its size in the world—something over six thousand acres. Nor is this record accidental. It was 'way back in 1896 that the late Judge Charles M. Campbell, then City Attorney of Boulder, conceived the idea of preserving the heavily forested mountain just back of the city as a priceless heritage for future generations and set about to get a bill through Congress granting to the City of Boulder, for all time, the fifteen hundred acres of Government land embraced in this mountain area.

The bill was passed, and thus by act of Congress began Boulder's mountain parks. Other far-visioned men and women, appreciating the value of these holdings, have carried on the work of education and campaigned for the acquirement of additional acreage, with the result that today Boulder owns practically the entire range of foothills including the rugged "Flatiron" country that forms a unique and picturesque background for the city.

It was fitting, therefore, that the Chamber of Commerce of Boulder should arrange a program for the community observance of American Forest Week, that began with an address on Thursday of that week, by Col. Allen S. Peck, District Forester for Colorado, to which all the Service Clubs, Women's Clubs and other civic organizations and interested citizens were invited.

Following Colonel Peck's address, three thousand seedling

Snapshots in Boulder's Municipally Owned Mountain Parks

Upper left: Boy Scouts et al. planting trees on the burned area on Flagstaff Mountain during American Forest Week. Right: Lovely Boulder Falls, nine miles from the city. Lower left: The Royal Arch, a natural rock formation; and, Right: The entrance to Colorado's Chautauqua Grounds in the City Park in summer

pines from the United States Forest Service nurseries at Monument, Colorado, were taken to the top of Flagstaff Mountain where they were "heeled in" to await planting over a burned area where a bad burn in 1924 had destroyed about twenty-five acres of forests. Friday morning men from the city's street and water forces went to the mountain top and began the work of planting.

The trees were paid for by voluntary contributions of all those who wished to be responsible for or to "buy" one or more of these baby pines—and the work was accomplished largely with the aid and the pennies of the school children of Boulder.

But Saturday, April 28th, was the "big day," when the planting was finished by about three hundred citizens, boy scouts, girl scouts and campfire girls—a real accomplishment on this, Boulder's first "Reforestation Day."

Reducing the Drain on Our Forests

(*Continued from page* 397)

of wood may be grouped into two classes: First, full-cell process, the object of which is to fill the spaces between the wood cells as completely as possible with the preservative, and second, the empty-cell process, the object of which is to get as deep a penetration as possible with the use of a minimum quantity of preservative. With the full-cell process from ten to sixteen pounds of creosote oil per cubic foot of wood is considered standard practice. For the protection of timber for marine use, especially against the attacks of ship worms, the oil is not spared, and frequently the wood is treated to the point of refusal, or about 18 to 24 pounds per cubic foot. In the empty-cell process the retention of from five to ten pounds of preservative per cubic foot is considered good commercial practice.

Although the practice of injecting chemicals into wood to prolong its life has been in existence for a great many years, the commercial treatment of timber did not begin in this country until 1848, when a kyanizing plant, one which employs mercuric chloride as a preservative, was constructed at Lowell, Massachusetts. This plant, originally used for the treatment of canal lock timbers, is still in operation. About 1874 a treating plant using creosote was built at West Pascagoula, Mississippi. From that time until the beginning of the present century the growth of the industry has been gradual, and even as late as 1904 there were only thirty treating plants in operation in the United States. In 1909, or just five years later, the number of plants had more than doubled. The sixty-four plants in operation during that year consumed 51,426,212 gallons of creosote and 16,215,107 pounds of zinc chloride in the treatment of 75,946,419 cubic feet of wood.

In 1926, the latest year for which statistics have been compiled, a total of 180 treating plants were actively engaged in the preservation of wood. This represents a further gain of over fifty per cent in plant capacity since 1920. The consumption of preservatives in 1926 consisted of 185,733,180 gallons of creosote, 13,317,022 gallons of petroleum, 2,541,563 gallons of paving oil, 24,777,020 pounds of zinc chloride, and 259,961 gallons of miscellaneous preservatives. The total quantity of wood that was given preservative treatment during that year was 289,322,079 cubic feet, or over three and a half times the quantity reported in 1909.

Wood has always been the cheapest and most widely used material for general construction. Because of its tendency to decay when untreated under certain conditions of use, it has not been able to compete with other materials around which the idea of lasting qualities is commonly centered. Wood that has been properly treated under pressure, however, possesses the added property of durability, which now permits of its being classed as a permanent building material, and at the same time still enables it to maintain the distinction of being the lowest in cost. Actual service records show that well-treated wood may be expected to give from at least twice to many times the life of untreated wood.

The benefits to be derived from the preservative treatment of timber are manifold. It allows the use of woods which because of their lack of durability were formerly considered unsuitable. It gives the user a wider field of selection for his material at a reduction in cost. It frequently permits of the use of local species of wood and thus eliminates high transportation charges. It makes renewals less frequent, and thus reduces the drain on our forests.

Vacationing With a Hobby

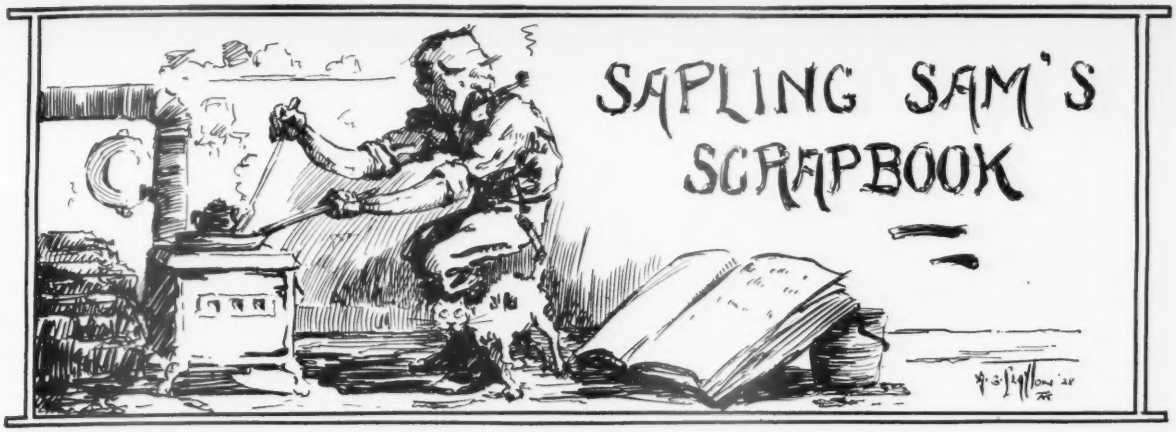
(*Continued from page* 409)

of an avalanche we brought down with us, and when we finally disengaged ourselves from the loose dirt and rock we discovered that we were before the great foaming Falls of Sluiskan.

The Reflection Lake Trail is but one of the many trails skirting Mount Rainier. Every day for a whole summer season there is a different trail to follow into new beauties and new wonders. We followed many, although after the first day a trail map and a box of matches tramped with us.

And then one day my hobby and I set out straight up the great mountain. Up the gigantic cliffs with the clinging heathers, crossing the roaring streams, climbing higher and higher, passing the Paradise and the Cowlitz Glaciers. We crossed great snowfields, detouring to explore ice caves, then climbing on and on to find all those brave little flowers of the great alpine heights blooming with a courage and a steadfast, happy purpose that would seem to force emulation from even the most weary of humans.

Yes, a hobby is a very good friend with whom to set out on a journey. I knew no lonely moments, and the followers of the trail had a smile for each of us. In a corner of my garden now is a miniature moraine seed bed, and the tiny green shoots of far-away alpines are just peeping through, harbingers of glories to come and memories of wild and happy trails.

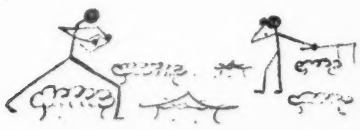


Must be Limit to This Blasphemy

"Last year we were told the busy bee is actually very lazy," says a Michigan paper, "and now an ornithologist says the dove, the symbol of peace, is really quarrelsome. No one yet accuses the polecat of being a geranium."

Good for Table Tops

The most extraordinary forest in the world occupies a tableland six miles in width, near the west coast of Africa, according to a news note. The peculiarity of the trees is that, though their trunks are as much as four feet in diameter, they attain the height of only a foot. It is understood that an American timber cruiser found great difficulty in measuring the diameters breast high.



The Worm Turns

William Beebe, the big Science and *Arcturus* man, tells it, and *Life* quotes it from the *Brooklyn Eagle*. He had been fishing for hours in a tempting southern stream, and for all his patience and perseverance not a nibble did he get.

About ready to call it a day, he turned disgustedly away to notice a little negro lad standing on the bank, watching him interestedly.

Noting Mr. Beebe's disgust, the lad piped up that he could tell him how to catch some fish.

"How?" asked Beebe.

"You-all jest soak that worm in a little whisky befoh you puts it on yoh hook," spake the colored one, "and jest yoh see if yoh don' catch somethin'!"

With a fairly hopeless gesture Beebe, willing to try anything once, did as he was bid. He selected a worm, soaked it in a little whisky that he had with him for purely cough purposes, baited his hook, threw it over, and waited.

But let him tell it:

"I chucked my line over, and it wasn't two minutes before there was a tremendous tug. This little colored kid knew something, I thought, and I began to reel in. And there it was, a sixteen-inch trout—not on the hook, but dead, with the worm having a stranglehold around its neck!"

Dismal Calculations

The following item was not clipped from the financial sheet of the *Detroit Times:*

"Phineas Shark, the eminent statistician and mathematician, whose findings appear exclusively in this department, estimates that at the present rate of increase less than two years and seven months will elapse before the vast open spaces in the United States are filled with tin cans, can openers, pickle and olive bottles, lunch boxes, waste paper and discarded tires."

Weather Note

The *Detroit Free Press* observes that "another of the minor differences between the seasons is that about this time of the year, when a man stoops over, his pencils, pen, etc., drop out on the lawn or on the flower beds instead of in the coal bin."

Pet Names

Pounding solemnly on his Oliver, the grizzled ranger grew sentimental:

"Further itemization and description of bedroll as per your letter of March 4:

"Included in three blankets is 'Old Cootie Corral.' Cost to present owner, stolen from a Mexican on Curtis Canyon fire in 1920.

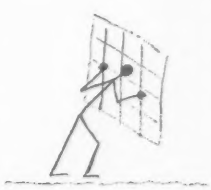
"Blanket No. 2, commonly known as 'Broom Straw,' thin but serviceable.

"Blanket No. 3, affectionately called 'Slick' except on cold nights; then known as x-x-o-x eel skin.

"Comfort No. 1 is 'Old Pinkie.' In case it should be lost or damaged, I don't want reimbursement in $ & ¢, but rather the hours I have spent trying to find heads or tails of the darn thing. Give me back those hours.—*R. P.*"

"When a Feller Needs a Friend"

Chief Forest Fire Warden George H. Wirt, of Pennsylvania, recently received the letter quoted below.



"As I was making a trip through my territory, looking over places that were probable of fire and where there were fires before, I was stopped by a man in an automobile, on the road to Gallittson, who asked me where I was going. I told him I was going over my route and was going to Gallittson.

"He says, 'Come on; I will give you a ride'; so I got on and he took me to Cresson, where he put me in jail and sentenced me to thirty days here in Ebensburg. Now, after I have over three weeks in, they have another charge of carrying concealed weapons against me for the gun I carry in the woods for protection, and they won't pay any attention to my badge and papers; so I wonder if you would explain my case to them, as I am going on trial this coming Friday.

"Yours resp.,

"(Sgd.) Mr. Sam Wanosco,
"Forest Fire Warden.

"Now Ebensburg County Jail."

"It is quite apparent that Sam's in trouble, and Wirt is investigating the matter," says the *Service Letter.*

$30,000,000 For Forestry

Seventieth Congress Sets Record in Forestry Legislation

In point of forestry legislation enacted and appropriations either authorized or voted, the first session of the Seventieth Congress, which adjourned on May 29th, established a record. Two measures of major importance were passed, the McNary-Woodruff bill, authorizing a three-year program for the establishment of National Forests in the East, and the McNary-McSweeney bill, providing for a greatly enlarged program of forest research on the part of seven governmental bureaus. Both of these measures were fully presented in the June issue of this magazine. The first Act authorizes total expenditures of $8,000,000, of which $2,000,000 becomes available on July 1, 1928. The research Act, which was signed by President Coolidge on May 22d, authorizes appropriations aggregating slightly over $3,000,000, but the full amounts specified for the various forest research activities will not be reached for a number of years.

For all forestry activities the Congress just adjourned authorized or appropriated upwards of $30,000,000. The amounts actually appropriated and becoming available during the fiscal year 1929 will exceed $20,000,000. This includes $19,750,500 for the work of the Forest Service, of which $7,500,000 is for the building of roads within the National Forests and $12,205,105 is for the regular forest activities of the Service. The total increase given the Forest Service for its work during the coming fiscal year amounts to almost $2,500,000. The following are the 1929 appropriations for these different activities:

Protection and administration of National Forests	$6,609,600
Forest insects (emergency)	75,000
Fire	100,000
Lands	50,000
Sanitation and fire prevention	40,000
Supplies and equipment	130,000
Forest products	505,000
Range investigations	49,755
Planting	210,000
Silvical investigations	354,300
Timber survey	67,100
Grazing reconnaissance	41,450
Improvements	557,900
Range improvements	30,000
Aërial fire control	50,000
Forest fire cooperation	1,200,000
Cooperative farm forestry	60,000
Cooperative distribution of forest planting stock	75,000
Purchase of Forest Lands in the East	2,000,000
Grand total	$12,205,105

The most important increases made by Congress were $250,735 for the protection and administration of the National Forests; $60,000 for forest planting; $61,000 for improvements on the National Forests; $200,000 for forest fire cooperation under the Clarke-McNary Act and $1,000,000 for forest acquisition under the Weeks and Clarke-McNary Acts. Congress also appropriated $23,529 for the use of the Weather Bureau in continuing its service of forest fire weather warnings.

Congress also passed a number of bills adding additional lands to some of the western National Forests. These additions, made upon the request of local communities, aggregate 340,000 acres, of which 225,000 were added to the Missoula National Forest in Montana, 46,000 to the Idaho National Forest, Idaho; 59,000 to the Challis National Forest in Idaho, 26,000 to the Sawtooth National Forest, Idaho, and 6,300 to the Gunnison National Forest, Colorado.

Important legislation affecting the National Forests which failed to pass included the Robinson-Wingo bill, which would have taken some 7,000 acres from the Ouachita National Forest in Arkansas for the purpose of creating a proposed Ouachita National Park. Hearings on this bill were held in both the Senate and House Committees on Public Lands, but neither committee made a report on the bill. Owing to the controversial character of the measure the House Committee, however, passed a resolution authorizing a sub-committee to investigate the proposal during the summer by visiting the region involved.

Hearings were also held by the Senate Committee on Agriculture on Senator Shipsted's bill looking to the creation of the Superior-Quetico National Park and Forest. No action, however, was taken by the Committee. The primary purpose of this bill is to secure the protection and development of the Superior National Forest as a recreational area and to make it a unit of an international park and forest system, of which the Quetico National Park would be a part. The Senate did, however, pass a resolution authorizing its Committee on Agriculture and Forestry to make a special investigation of the protective measures proposed to be adopted by the bill with a view to determining the advisability of the principles set forth. The committee, in making its investigations, is authorized to hold hearings at different points in the United States and Canada and is directed to make its report to the Senate as soon as practical.

Although a number of grazing bills were introduced, Congress enacted no legislation dealing with the much-mooted question of grazing on the National Forests.

In the matter of flood control of the Mississippi River forestry received little consideration by the Seventieth Congress. In the $325,000,000 flood control legislation enacted only one reference is made to forestry and that is of a cloudy nature. Section 10 of the Act provides that the President shall proceed to ascertain through the Secretary of Agriculture or such other agencies as he may deem proper the extent to which floods in the Mississippi Valley may be controlled by proper forestry principles. Whether or not any of the money appropriated under the Act may be spent to prosecute studies of the influence of forests upon flood conditions in the Mississippi Valley is not clear.

Appropriations for the Bureau of Entomology to be used in studying and controlling forest insects during the fiscal year 1929 amounts to $89,389. This is an increase of $9,000 over the current year and the increase is for the purpose of extending the Bureau's work of insect control to the National Parks. In addition to the foregoing appropriations, Congress provided $90,000 for control of the gypsy moth, which has recently been placed under the jurisdiction of the Bureau of Entomology.

For blister rust control, which is lodged in the Bureau of Plant Industry, Congress appropriated $445,000. Approximately $200,000 of this appropriation will be spent in the East and $245,000 in the West, where the work of field control has become necessary. Out of a total appropriation of $150,000, covering its work with shade and ornamental trees and shrubs, the Bureau receives $98,500 for investigative and experimental work in diseases of forest trees and forest products.

Congress passed three wild life measures of particular interest. One is the Bear River Migratory Bird Refuge Act, providing $350,000 for purchase of lands and the necessary construction of improvements to establish and maintain the Bear River Marshes of Utah as a bird refuge and breeding ground for migratory birds. The refuge is to be administered by the Biological Survey. The second measure is the bill introduced in the House by Representative Scott Leavitt of Montana, which appropriates $150,000 to purchase private lands in and adjoining the Absaroka and Gallatin National Forests in Montana for the purpose of providing winter range for elk, antelope, and other animals which must come down out of the Yellowstone National Park for food during the winter months. The Winter bill, which sought to provide additional lands for elk range on the south side of Yellowstone National Park, failed of passage.

By authorizing the Biological Survey to pay up to $10 an acre instead of $5 for lands to be included in the Upper Mississippi Wild Life Refuge, Congress opened the way to

(*Continued on page* 445)

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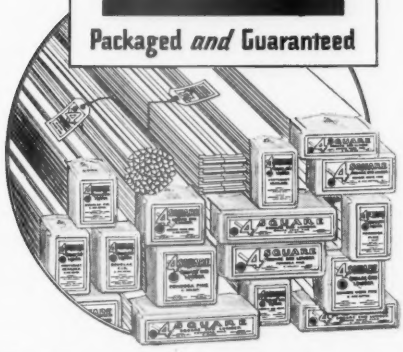

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Mention AMERICAN FORESTS AND FOREST LIFE—*It Helps*

Burnham Gives Up Presidency of American Game Association

John B. Burnhan, who has served as president of the American Game Protective Association since its organization in 1911, resigned late in April. Mr. Burnham wished to be relieved of the duties of that office to give more attention to his personal and business affairs.

In relinquishing the presidency, Mr. Burnham closes a long and remarkable official career during which the Association has made great strides toward carrying out its purposes. He will remain as a member of the board of directors and participate actively in the Association's affairs.

President Gets Report on Forestry in Flood Control

Complying with a request from the White House, the Secretary of Agriculture has submitted to the President an initial report of the Forest Service on the relation of forestry to the control of floods in the Mississippi Valley.

The request was made in accordance with the terms of the flood control act of May 15, in which Congress gave recognition to the fact that forestry must have a place in the ultimate plans for the prevention of floods. The act contained the provision that "The President shall proceed to ascertain from the Secretary of Agriculture the extent to which the floods of the Mississippi Valley may be controlled by proper forestry practice."

This provision was written into the act, according to Representative Scott Leavitt, its sponsor, in order that the national flood-control policy should contain "an acceptance of the principle that any flood-control plan to be final and ultimately effective must include forestry practice at the heads of all streams involved."

The report submitted to the President was based on a study made during the last year under the direction of Associate Forester E. A. Sherman on the forest conditions throughout the Mississippi watersheds and their influence on streamflow.

In compliance with the President's request, the Forest Service will immediately begin additional studies and the collection of additional data on the relation of proper forestry practice to flood control, to supplement the initial report just submitted.

Gift Features Georgia Forestry Meeting

Formal transfer of a beautiful tract of virgin pines and hardwoods from the Pfister and Vogel interests of Milwaukee to the State of Georgia featured the sixth annual meeting of the Georgia Forestry Association, held at Gainesville, June 8 and 9. The tract embraces 140 acres lying in Niel Gap, including the top of the famous Blood Mountain, and marks the beginning of a system of State Forests contemplated by the Forest Department of Georgia to be developed for recreational and forest purposes.

Ceremonies commemorating the gift were held on the tract on Saturday. The delegates attending the meeting were taken into the mountains by motor cars furnished by the Gainesville Chamber of Commerce. T. S. Candler, of Blairsville, attorney for Fred Vogel, Jr., of the Pfister and Vogel Land Company, formally presented the deed transferring the tract to the State. B. F. Lufburrow, State Forester, accepted the gift on behalf of Governor L. G. Hardman and the Georgia State Board of Forestry.

Governor Hardman was the principal speaker at the opening session Friday morning and delivered an address notable for its inspirational influence and its expression of whole-hearted support of forestry on the part of the governor. Ovid M. Butler, Secretary of The American Forestry Association, spoke of the value of the forests of northern Georgia as an economic and recreation asset. The afternoon session was devoted to a round-table discussion of educational work, a feature of which was the educational project proposed by The American Forestry Association.

At the banquet in the evening, a handsome silver-bound gavel was presented to Bonnell H. Stone, of Blairsville, for his long and devoted service to forestry in Georgia. Officers elected for the ensuing year were C. B. Harman, Atlanta, President; Mrs. M. E. Judd, Dalton, First Vice-President; T. D. Burleigh, Athens, Second Vice-President; Mrs. Madge Merritt, Brunswick, Third Vice-President; Bonnell H. Stone, Blairsville, Secretary, and Frank T. Reynolds, Atlanta, Treasurer.

South Carolina Names Forester

Lewis E. Staley, formerly Deputy Secretary of the Pennsylvania State Department of Forests and Waters, has been named State Forester of South Carolina. He took up his new duties June 18.

Mr. Staley was graduated from the Pennsylvania State Forest School at Mount Alto, in 1906, and immediately entered the State Forest Service, resigning in 1927 to take up industrial forestry work at Gettysburg, Pennsylvania.

Forestry legislation was enacted in South Carolina about a year ago, but as there was no appropriation, State forestry work is carried on through contributions. A State Forestry Commission of five members has also been created.

Forests and Parks---Forestry and Play

New growth four years after clear-cutting, Union Lumber Company's land, Mendocino County, California

Some city children believe that meat grows on trees.

A surprisingly large number of intelligent people seem to think that civilization can obtain the immense quantities of wood it requires and still maintain virgin forests.

They see no difference between National Forests and National Parks.

In conservation conversation it is frequently revealed that people think of all tree-felling as "destruction" instead of utilization. Uninformed enthusiasts talk of lumbering and paper-making as "destructive"; they don't so talk of iron and steel making.

Yet the iron ore and the coal that go into steel represent exhaustion of irreplaceable material.

The forests are renewable and have been renewing themselves for five million years.

They can do a better job of renewal with man's assistance—managed tree-growing, forestry. Forest-cropping involves planning, foresight, care, time and expense, interest, taxes, fire-fighting, war on pests, patrolling, etc.

Profitable disposal of the crop pays the tree-cropping bills. Commercial forests must pay for themselves or there will be none.

A commercial forest often answers the purposes of a park, but it is primarily for business—and a park is for pleasure.

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Conference on White Pine Blister Rust Quarantine

A conference was called by the Federal Horticultural Board at the United States Department of Agriculture, at Washington, D. C., June 27, for the purpose of considering the advisability of modifying the requirements governing the interstate movement of five-leafed pines and of currant and gooseberry plants on account of the white pine blister rust.

Fifteen States have been designated by the Secretary of Agriculture as infected with this disease, namely: Connecticut, Idaho, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Vermont, Washington and Wisconsin. Five-leafed pines originating in these States are not at present allowed to be moved into noninfected States nor from heavily to more lightly infected ones.

European black currant plants, which are especially susceptible to attack by the blister rust and are more likely to carry it than other varieties of currants and gooseberries, are permitted interstate movement only within twelve of the Great Plains and Southern States where five-leafed pines either do not grow or are not of economic importance. Currant and gooseberry plants other than European black currants may, under the present regulations, be shipped interstate anywhere in the United States except into certain limited blister rust control areas, provided that such movement from the States designated as infected is limited to certain less susceptible varieties moving under special conditions.

Since these regulations were adopted two years ago, scientific investigations have indicated that it may be possible to modify these requirements in some degree without increasing the danger of the distribution of the blister rust to new localities. The conference included discussion of the desirability and safety of the following proposals:

That five-leafed pines be permitted wider movement from the generally infected areas of New York and the New England States into more lightly infected States when they have been raised from seed in a nursery free of ribes and further protected against blister rust infection by a ribes-free zone surrounding the premises.

That Federal permits be issued for the interstate movement of inspected cultivated red and white currants, mountain currants, and cultivated gooseberry plants under the sole requirement that they be dipped in lime sulphur solution before shipment, discontinuing the present practice of requiring an inspection of the vicinity of the nursery.

That the shipment of permitted species of currant and gooseberry plants from the infected States be discontinued at an earlier date in the spring than at present so as to make feasible the removal of the dormancy requirement for such spring shipments by limiting the movement of ribes to the period

prior to that in which aeciospores are produced on the pines, and that slightly earlier fall shipment of defoliated plants be allowed.

That the declaration of contents as now required for the shipment of blister rust host plants be eliminated. It is understood that all such packages must meet the conditions of permit and certification required under the quarantine.

Grazing Use of National Forests Shows Gain

According to the United States Forest Service, 7,872,266 head of stock grazed on the National Forests in 1927, an increase of 165,290 head over 1926. Of this number 6,412,700 were sheep and goats and 1,459,566 cattle and horses. This was 54,244 less cattle and horses than in 1926 and 219,534 more sheep and goats. The loss in cattle and gain in sheep was heaviest in Arizona, where the Forest Service grazed in 1927 nearly 25,000 less cattle, or forty-six per cent of the total loss, and 81,000 more sheep, or twenty-seven per cent of the total increase.

Only two states, Colorado and Wyoming, showed an increase in the number of cattle and horses grazed. Idaho and Montana each showed a slight falling off in the number of sheep grazed. Colorado and Wyoming were the only states that showed increases in numbers grazed of each class of stock.

Wild Life School Opens in August

The tenth annual session of the American School of Wild Life Protection will open at McGregor, Iowa, August 7. The school is sponsored by the citizens of McGregor and is conducted by instructors of the natural sciences of the universities and colleges in the Mississippi Valley states. It is operated in conjunction with the Federal Fish and Game Departments and associations interested in the preservation of natural scenery and outdoor life conditions.

To Dedicate Ranger School

The new building of the New York State Ranger School, at Wanakena, will be dedicated August 24, according to Dean Franklin Moon of the New York College of Forestry, Syracuse University. A conference on Ranger School Education will be held in the new building the following day. The new school was made possible by a special appropriation of the state and the building is conceded to mark the latest in facilities and equipment to train men in the special field of forestry.

Royal Canadian Air Force Ready to Patrol Canadian Forests

The 1928 program of the Royal Canadian Air Force in civil operations for government departments includes, subject to such alterations as circumstances may necessitate:

Provision of twenty hours' flying time for emergency fire periods in British Columbia; continuation of air patrol as in 1927 in Alberta; continuation and intensification of aerial patrols over fourteen and a half million acres of forest in Saskatchewan; and continuation of the work in fire prevention and suppression covering forty million acres in Manitoba, and

Photographic surveys in the Nelson River watershed in connection with possible pulp and paper development, and in the Saskatchewan patrol area in order that base maps may be prepared for use of air patrols.

Government Takes Over Bright Angel Trail

Visitors to the Grand Canyon National Park will no longer have to pay a toll charge of one dollar for riding over the Bright Angel Trail. This trail has just been acquired by the Government, and will be operated by the National Park Service. No toll charge is made over any trail in the National Parks.

The Bright Angel Toll Road and Trail, as it was formerly called, was owned and operated for a number of years by the County of Coconino. Negotiations have been carried on for several years for the purchase of the trail by the Federal Government, and arrangements to effect this have just been consummated by acceptance of deed from the county, conveying all its right, title, and interest in and to the same.

As payment for the Bright Angel Trail the United States, through the Secretary of the Interior, as authorized by act of Congress approved June 5, 1924, has allotted the sum of $250,000 for the construction and improvement of the Grand Canyon Highway from the National Old Trails Highway through Coconino County to the boundary of the Grand Canyon National Park. On June 1, contract for starting construction and improvement of this approach road was awarded.

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Catalogue

SABATTIS, N. Y.

Engineers Meet at Chattanooga

The summer meeting of the committees on wood preservation of the American Railway Engineering Association was held at Chattanooga, Tennessee, June 12 and 13, jointly with commitees of the American Wood Purchasers' Association.

Conserve Fisheries of Great Lakes

Two important conferences have recently been held looking toward the adoption of a co-operative policy for the preservation of the Great Lakes fisheries resources. One of these conferences was held at Cleveland, Ohio, and the other at Lansing, Michigan. The Cleveland conference related particularly to the fisheries of Lake Erie, but the other embraced the entire Great Lakes system.

The Cleveland conference was called by the United States Commissioner of Fisheries and was participated in by representatives of New York, Pennsylvania and Ohio states and the Ontario fisheries departments and various educational institutions, including the Buffalo Society of Natural Sciences, Wooster College of Wooster, Ohio, Ohio State University, Cleveland Museum of Natural History, the Michigan State University, Western Reserve University, and the University of Toronto.

Colorado Mountain Club Outing

The sixteenth annual outing of the Colorado Mountain Club will be held August 11 to 26, inclusive, in the Elk Mountains. The party will start from Denver and visit Glenwood Springs, Lookout Ridge, Unnamed Ridge, Maroon Peak, Hagerman Peak, Snowmass Peak, and many others.

Edwin T. Meredith, Former Secretary of Agriculture, Dead

Edwin T. Meredith, Secretary of Agriculture in the Wilson Cabinet, died at Des Moines, Iowa, on June 17, following a long illness. He had for years taken an active interest in forestry and outdoor life, especially in organizing farm boys and girls in club work

Starting as a "dirt" farmer, Mr. Meredith established the Meredith publications, which included *Successful Farming, Better Homes and Gardens* and *The Dairy Farmer*, the three having a combined monthly circulation of more than 2,000,000.

In 1917 he was appointed to the Board of Excess Profits Advisers of the Treasury Department, and in 1919 was named a member of the Industrial Conference Commission. The following year President Wilson selected him for the post of Secretary of Agriculture to succeed David F. Houston.

Mr. Meredith served as president of the Associated Advertising Clubs of the World in 1919. He also was a director of the Audit Bureau of Circulation and of the United States Chamber of Commerce.

Arizona Game Association Reorganizes

After two years of inactivity, the Tucson Game Protective Association, of Tucson, Arizona, was recently reorganized. Dr. Charles T. Vorhies, of the University of Arizona, was elected president, Herbert C. Chambers, vice-president, and Fred Winn, secretary-treasurer. Under the new plan, the Association will work toward game enforcement and restocking various areas with game.

Bird Refuge Established in Wyoming

By recent Executive order, President Coolidge has reestablished for the protection of native birds the Pathfinder Bird Refuge, embracing 22,700 acres on the North Platte River in central Wyoming. The area is set aside as one of the numerous refuges administered by the Bureau of Biological Survey.

All the lands involved have been withdrawn for reclamation purposes in connection with the North Platte Project, Wyoming, and are primarily under the jurisdiction of the Department of the Interior. The area includes mainly a reservoir constructed for the use of the Reclamation Service in the irrigation of lands. The establishment of this refuge furnishes nesting grounds as well as important feeding and resting places for the large numbers of migratory waterfowl, especially ducks, in a region where open water areas providing a haven for birds are scarce.

Organize to Aid Bronx Parks

An organization committee for the "Park and Forestry Association of Bronx County," New York, an organization for the preservation and development of the parks and parkways of that borough, was recently appointed. Lieutenant Colonel Daniel P. Sullivan, President of the American Memorial Parkway Association, was appointed head of the committee, other members of which include Brigadier General Brice P. Disque, former Park Commissioner John E. Eustis and former Deputy Public Service Commissioner Charles V. Halley, Jr.

The association, the corporate name of which has already been approved by the Secretary of State, will affiliate itself with state and national park and conservation organizations. It will urge the planting of memorial trees, campaign for funds for reforestation and conduct citizens' park inspections in an effort to increase public interest in parks and parkways.

Ask the Forester

Each Month Forestry Questions Submitted to the Association Will Be Answered in This Column. If an Immediate Reply is Desired a Self-Addressed, Stamped Envelope Must Accompany Letter.

QUESTION: What is the oldest oil of importance today made from trees or the fruit of trees?—*J. J. B., New York.*

ANSWER: Olive oil, made from the fruit of the olive tree, is one of the oldest vegetable oils. Its production in the Mediterranean basin antedates recorded history. Its importance today is shown by the fact that in 1927 over 2,000,000,000 pounds were produced. Spain, Greece, Italy, Tunis, Portugal, and Algeria produce over 90 per cent of the world's supply. The commercial growing of olive trees in the United States is limited to Arizona and California, but the production of olive oil is only about three-quarters of a million pounds.

QUESTION: What are the principal game animals found in the National Forests of the West? Is hunting permitted in the National Forests?—*J. H. B., Nebraska.*

ANSWER: The Forest Service estimates that the National Forests harbor more than 600,000 deer, 72,000 elk, 55,000 bears (of which about 6,000 are grizzlies), 7,500 antelope, 6,000 moose, 18,000 mountain goats, and 12,000 mountain sheep. In certain regions there are a few buffalo and caribou. The National Forests are open to hunting during the established game seasons.

QUESTION: Is blight-killed chestnut suitable for the building of log cabins?—*M. B., Pennsylvania.*

ANSWER: Yes; but be sure the trees are not infected with decay. Tests made at the Forest Products Laboratory at Madison, Wisconsin, indicate that blight-killed chestnut is as durable as green and healthy growing chestnut.

QUESTION: On a recent visit to my summer place in New Hampshire, I found that woodchucks are doing a great deal of damage in the grounds surrounding the house. How can they be exterminated?—*C. C. R., New York.*

ANSWER: Pour about three tablespoonfuls of carbon disulphide on a wad of cotton or waste and place it well down into the entrance of each burrow. Close the entrance tightly with sod or a stone and seal it over with damp earth to prevent the carbon disulphide gas from escaping. In handling, keep all fire away, as the carbon disulphide is highly explosive and inflammable.

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Book News and Reviews

LEAF-MINING INSECTS. By James G. Needham, Stuart W. Frost, and Beatrice H. Tothill. The Williams & Wilkins Company, Baltimore. Price, $6.00.

For both the specialist in ecology and the person with only a casual interest in the subject, this book, with its three-part arrangement, will have a strong appeal. There is, first, a simple, concise introduction, devoid of technicalities, which presents an elementary study of leaf-mining insects. This is followed by a natural history of the insects for the ecologist's use. And, finally, there is given a scientific, detailed treatment of the subject, including lists of technical paper which will prove profitable to the advanced student. The natural historian, also, will be attracted by the fascinating account of the unique manner in which these minute creatures live.

The authors are especially successful in their attempt to bring together, in a compact, readable form, the valuable but scattered information obtained through previous investigations in this field of ecology. Profuse illustrations in themselves tell a large part of the story. The volume is, altogether, one that cannot but find a welcome with anybody whose interests lie directly or indirectly in the subject of general biology.—B. F. G.

Important standardization activities in many American industries during the past twelve months are described in the Year Book of the American Engineering Standards Committee, issued June 4. Forty-nine new standards and forty new projects are listed for numerous branches of industry and engineering, including mechanical, civil, electrical, mining, wood, textiles and safety.

THE CARE OF ORNAMENTAL TREES. By C. F. Greeves-Carpenter. The Macmillan Company, New York. Price, $1.25.

This little book is a brief and compact compilation of reliable information for the owner of trees or those responsible for their care. Handled concisely but accurately, the author, a well-known writer on horticultural subjects, starts with an explanation of the structure of trees, their reproduction and growth, and then goes into planting and pruning operations, fertilization and spray-

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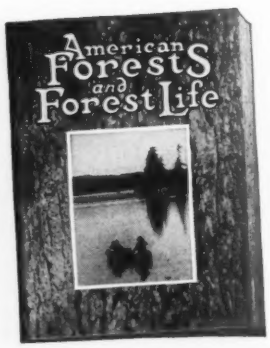

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ing, giving brief directions for tree surgery, filling cavities, bracing and cabling. As a guide for the care of trees on a large estate, or for the owner of just a few trees, the book is practical and usable.—L. M. C.

The effects of erosion are interestingly though necessarily briefly presented in a recent bulletin by H. H. Bennett and W. R. Chapline, entitled, "Soil Erosion a National Menace," published by the United States Department of Agriculture at Washington.

In Part 1 Mr. Bennett discusses some aspects of the wastage caused by soil erosion, stressing the evils of erosion by rainwash, and in Part 2 Mr. Chapline takes up the question of soil erosion on Western grazing lands, telling very comprehensively the story of the enormous toll paid by the West in the loss of her ground cover and the subsequent sheet and gully erosion following the depletion of vegetation.

MANUAL OF CULTIVATED TREES AND SHRUBS, by Alfred Rehder. Published by The Macmillan Company, New York. Price, $10.50.

This book systematically presents descriptions of the cultivated trees and shrubs which grow readily in the temperate regions of North America. The plan of the book is very similar to Gray's Manual and Britton's Manual, which were written for the student of spontaneous flora, and contains an analytical key to enable the user to easily identify over 2350 species and numerous hybrids. Short statements as to the ornamental and economic character of the species are accompanied by some suggestions as to their culture and comparative hardiness. The subject is treated in a wide sense, including woody vines and suffruticose plants.—D. M. K.

Under the title "New York State Parks and Highways" the New York State Council of Parks issues, in the form of a booklet, a most intriguing invitation to come and play, "Pack up and away!" And surely anyone who sees it will be sorely tempted to accept and roll out the old flivver for a trek through the trails of the New York State Parks. For beauty and variety of landscape are offered in rich measure by the parks of the Empire State and perfect highways for their traversing. The purpose of the booklet, which is beautifully gotten up and profusely illustrated, is to better acquaint—not only her own people, but people of other states as well—with what New York has to offer in parks and recreational areas, how these may be reached, and what one finds when he goes. To the vacationist New York offers the ocean surf on Long Island, hiking, camping and swimming; or pine-scented mountain air, with fly fishing in stream and lake; the health-giving waters of Saratoga, marvelous waterfalls, horseback riding over real forest trails—days filled with the tonic freedom of out-of-doors. An invitation to nights beneath the stars, lulled to sleep by the roar of the surf or the murmur of a mountain-fed stream, the air pungent with the scent of the camp-fire—an invitation indeed hard to resist. The book was compiled by a special committee appointed by Governor Smith and is distributed through The State Council of Parks, Henry F. Lutz, Secretary, Albany, New York.

FORESTRY IN WISCONSIN—A NEW OUTLOOK. Published by the Conference and distributed by H. L. Ashworth, 49 E. Wells Street, Milwaukee. Price, $1, postpaid.

This is the official report of the Wisconsin Commercial Forestry Conference held at Milwaukee March 28th and 29th, in itself outstanding for the fact that it hewed close to the line of State problems and so set a worthy mark for similar regional meetings to follow. While the scope and purpose of the Conference, as set forth by the various speakers and papers delivered there, is fully covered, the book is in reality an exposition of timber growing for profit. The editors have compiled an interesting and comprehensive collective discussion of the land and forest situation in the State of Wisconsin, fire suppression, timber taxation, wood utilization and the economic and social values of the forest, with a digest of Wisconsin's new forestry laws. With no intent to offer a verbatim report of the proceedings of the Conference, the editors have overlooked no important point that was discussed there and the result is a complete and interesting record of this aggressive and epochal effort in behalf of the perpetuation of Wisconsin's forests and forest-using industries.—L. M. C.

The 1927 Yearbook of Agriculture is now being distributed by the United States Department of Agriculture. This volume is the second of a series designed to report recent agricultural developments in brief articles. It contains 320 articles, varying in length from 250 to 1,500 words, in which new scientific discoveries and progress in farm production and marketing are dealt with by department specialists. Every branch of the department's work is represented. But the book is not confined to matters arising directly from the department's research or regulatory activities. It also covers developments resulting from the progress of science and invention generally, and from the ceaseless effort of the agricultural industry to adapt itself to changing conditions.

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Rededication of Initial "Mother's Tree"

THE first Mother's tree, a white birch, planted on the shore of Antietam Lake, at Reading, Pennsylvania, in 1923, under the auspices of The American Forestry Association, was rededicated by the people of Reading on May 13. The service was arranged by Solan Parkes, originator of the Mother's tree idea, and

THE INITIAL MOTHER'S TREE

Planted in 1923 on the shore of Lake Antietam by Solan L. Parkes, this slender white birch sapling dedicated to honor motherhood is growing in strength and beauty

Earl I. Pritchard, superintendent of recreation of Reading. Mayor J. Henry Stump of Reading, and the Rev. John R. Humphreys were the principal speakers.

"This service for mothers," said Mayor Stump, "is one of the most significant things that a community can do. Reading is proud that five years ago the first Mother's tree—a living monument to mothers—was planted here."

One of the outstanding features of the rededication service was a chorus of 200 voices. While the chorus sang "My Mother's Prayer," Miss Bertha M. Beyerle, of Reading, tied two ribbons to the white birch tree, a pink as tribute to living mothers and a white below it in honor of those who have passed away.

The American Forestry Association presented to the city a certificate registering the tree with the Association in memory of the mothers of the world. Letters commending the service were also read from Ovid M. Butler, Secretary of the Association, and from R. Y. Stuart, Chief of the United States Forest Service; Henry S. Graves, dean of the Yale Forest School; Charles Lathrop Pack, President of the American Tree Association; George M. Cornwall, editor of the *Timberman;* Franklin Moon, dean of the New York State College of Forestry, Syracuse University; and Miss Barbara Bayne, tree historian, of California, who plans to include the initial Mother's tree in her first book on famous and historical trees.

While the initial Mother's tree was being rededicated at Reading, another Mother's Tree of national importance was planted at Fredericksburg, Virginia, in honor of Mary Washington, the mother of George Washington. A white birch, presented by the Colonel Tench Tilman Chapter, D. A. R., of which Mrs. Eva Chase is chairman of the conservation department, will shade this famous mother's grave. The spade used in the planting of the initial tree at Reading, the property of The American Forestry Association, and which later was used to plant the tree on the lawn of the White House in memory of the Mothers of the Presidents and the Mother's tree on the Capitol grounds, was used at the Fredericksburg service.

California and Nevada Fire Regulations

The 1928 fire regulations for the National Forests of California and southwestern Nevada have been announced as follows:

1. A camp fire permit must be secured before building any outdoor fires on National Forest lands, including fires in stoves burning wood, gasoline or kerosene. A new form of permit will be used this season and will not be accompanied by the usual fire windshield sticker. The applicant must sign the permit in the presence of the issuing officer to make it valid, and must also register his name, address, automobile make and license number, number of people in party and destination, before receiving his permit. Camp fire permits may be secured from any Federal or State forest officer, automobile clubs and other designated agents.

2. A shovel and ax must be carried by each automobile and pack outfit party camping in the National Forests.

3. No smoking will be permitted on National Forest land during the fire season, except in camps or at places of habitation.

4. In certain National Forests in southern California, the building of camp and picnic fires will be restricted to improved and posted camp grounds.

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New Forest Fire Risk

The "hitch-hiker" and the migratory worker who has abandoned the freight train for the main highways present a new forest fire hazard in the wooded sections, according to reports of field officers to the United States Forest Service.

These highway travelers drop off anywhere, are careless with their "smokes," and build their camp fires and leave them night or day at the first opportunity to catch a ride. State road patrol agencies are co-operating in some sections in handling this risk; and in extremely bad fire weather, emergency patrols when available are sent over roads through the National Forests in fire trucks.

Stuart Becomes Vice Chairman of Wood Utilization Committee

Major R. Y. Stuart, Chief of the United States Forest Service, has been appointed Vice-Chairman of the National Committee on Wood Utilization, of the Department of Commerce. He succeeds Colonel W. B. Greeley, who recently resigned from both posts to become secretary-manager of the West Coast Lumber Manufacturers Association.

Annual Conference at Madison

Representing the principal western district offices and experiment stations and the main office at Washington, D. C., executives of the United States Forest Service gathered at the Forest Products Laboratory, Madison, Wisconsin, June 4 for their annual research conference.

The purpose of this yearly conference is to consider and map out the wood utilization investigations to be conducted by the laboratory during the ensuing year. These studies embrace forest management and silvicultural practices as well as problems having to do with the mechanical, physical, and chemical properties of wood; and an increasing number of those applying to milling and manufacturing are carried on jointly with the research officers in the various National Forest districts.

Those who participated in the research program conference besides laboratory officials included Earle H. Clapp, assistant forester in charge of research; H. S. Betts and R. E. Marsh, Washington, D. C.; E. I. Kotok, director, and C. L. Hill, forester, California Forest Experiment Station, Berkeley, California; C. M. Granger, district forester, and W. H. Gibbons, in charge of forest products, Portland, Oregon; M. I. Bradner, chief of forest products, Missoula, Montana; Allen S. Peck, district forester, and E. W. Tinker, assistant district forester, Denver, Colorado.

$118,000 for Yellowstone Museum

The American Association of Museums has received a grant of $118,000 to be used by its Committee on Outdoor Education in extending its work in the Yellowstone National Park. In addition to a central museum, it is planned to erect a number of trailside museums at points of scientific and educational interest throughout the park, and a scientific and educational headquarters at Mammoth.

The museum at Yosemite, erected three years ago and designed to tell the geological, biological and historical stories of the park, has become an important educational factor and is visited by thousands of tourists each year. The museum on the rim of the Grand Canyon is now nearing completion.

Appalachian Trail Conference

The second meeting of the Appalachian Trail Conference was held at Washington, D. C., late in May. The outstanding features of the meeting were an exhibition of trail-cutting tools and implements of camping equipment, and a twelve-mile trip over part of the Appalachian Trail recently completed on the Blue Ridge Mountains. C. Freeman Pollack, President of the Northern Virginia Park Association, addressed the meeting.

Summer Homes in Oregon Forests

More than one thousand permits for summer homes are in force in the twenty-two National Forests of Oregon and Washington, and the number is steadily increasing. Most of these are for sites for summer homes of business men and other city-dwellers whose families often spend their summers in the mountains, although a considerable number come also from the smaller towns and farms of the hotter and drier portions of central and eastern Oregon and Washington.

Many attractive home-sites are found along the timbered shores of lakes and streams in the various National Forests where opportunities for boating, swimming and fishing often combine with beautiful scenery and cool climate to induce more and more people to take up their summer abodes in the mountainous areas of the two States.

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AFTER

Forestry in the Seventieth Congress

(*Continued from page* 432)

more speedy blocking up of that important wild life reservation. The old limitation of $5 an acre which the original Acts specified has been a heavy handicap to the Biological Survey in purchasing the lands which should naturally be included in this refuge. This is because of the fact that private owners refused to sell at such a low price.

Although hearings were held on the Capper bill to create the Great Falls Park on the Potomac River and on the Norris bill to authorize the development of power on the Potomac River just above Washington, Congress took no action. It did, however, block the Federal Power Commission from issuing a preliminary permit to develop power on this stretch of the river by passing a resolution introduced by Representative Cramton, which reads as follows:

That in order to preserve for development, in whatever manner Congress may ultimately find most desirable, the natural resources in water, potential water power, and park and recreational facilities afforded by the falls and gorge of the Potomac River near the National Capital, the Federal Power Commission be, and hereby is, authorized and directed to refuse to issue any permit, preliminary or final, to any private interest for the development of water power in the Potomac River between the mouth of Rock Creek and a point 4 miles upstream from the present intake for the water supply of Washington, until further action of Congress, after consideration of such joint report or separate reports as may be made by the National Capital Park and Planning Commission and Federal Power Commission as to the best utilization of the said area for the public benefit.

This resolution is directed primarily against the application made last year by the Potomac River Company for a preliminary permit to develop power on the Potomac River. The Federal Power Commission has had this application under consideration pending a report from the joint committee appointed by the Office of Engineers of the United States Army on behalf of the National Capital Park and Planning Commission and the Federal Power Commission. This joint committee was appointed to investigate the feasibility of combined power and park development with the view of ascertaining just what sacrifices and scenic features would be involved in the power development proposed. The committee has not yet made its report.

The National Park System fared well in the enactment of important legislation during the first session of the Seventieth Congress. The first deficiency act of the Seventieth Congress, enacted December 22, 1927, carried an item of $1,000,000 for road construction in the National Parks. The Interior Department Appropriation Act, which became a law on March 7, 1928, carried a total of $4,657,200 for the National Park system, including the Washington office.

On February 16 the President signed the act to reduce the minimum area for the proposed Shenandoah National Park for administration, protection, and development from 385,000 plus acres to 327,000 acres. This act also authorized the Secretary of the Interior to lease lands within the Shenandoah and Great Smoky Mountains proposed parks for short periods after the establishment of the parks to those owners who can prove it would be a great hardship for them to have to vacate immediately upon the passing of title.

On February 25 the President signed the act to change the name of the Utah National Park, the establishment of which was provided for in the act of Congress approved June 7, 1924, to the Bryce Canyon National Park, and to add certain lands to the area proposed for park status. The preliminaries necessary to the establishment of the Bryce Canyon National Park have not yet been concluded.

An act to accept the cession by the State of Colorado of exclusive jurisdiction over the lands embraced within the Mesa Verde National Park was signed by the President April 25. On April 26 an act to accept cession by the State of California of exclusive jurisdiction over the Lassen Volcanic National Park was signed by the President. Also on the 26th the President signed the act to add to the Lassen Volcanic Park an eighty-acre tract of Government land for use as administrative park headquarters.

On May 24 the President signed an act to repeal the provision in the organic act establishing Mount McKinley National Park which allowed prospectors and miners in the park to take and kill game for actual necessities when short of food. The repeal of this provision was important if the park's caribou and mountain sheep herds were to be protected. This bill also provides for the repeal of the provision of the organic act inhibiting the appropriation of more than $10,000 annually for the park.

The Second Deficiency Act, approved May 29, contained appropriations for certain National Parks amounting to $17,500.

On May 29, also, the President signed the act authorizing the acquisition of certain patented lands adjoining the Yosemite National Park, by exchange, for addition to the park. The object of this act was to secure certain land adjoining the western boundary of the Yosemite to protect the park's deer herds.

Among the bills bearing upon National Parks which Congress failed to act upon were:

A bill to transfer jurisdiction over certain national military parks and national monuments from the War Department to the Department of the Interior.

Two bills to revise the boundaries of the Yellowstone National Park, both introduced

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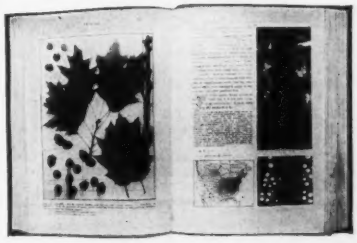

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SALE OF TIMBER
Navajo Indian Reservation
Defiance Plateau Unit

Sealed bids in duplicate on forms provided therefor, marked outside "Bid, Defiance Plateau Unit" and addressed to "Superintendent, Southern Navajo Agency, Fort Defiance, Arizona", will be received until 2 o'clock p. m., mountain time, Tuesday, September 11, 1928, for the purchase of the merchantable western yellow pine timber, estimated to be 500,000,000 feet, on a tract comprising about 145,000 acres within the Navajo Indian Reservation, Arizona, described as follows: Townships 1 and 3 North, Range 6 West; Townships 1, 2 and 3 North, Ranges 7 and 8 West; Townships 25 and 26 North, Ranges 29 and 30 East; and the unsurveyed area lying between the last described townships and the Navajo Base Line, except approximately six and one half sections on which the timber is reserved for Agency sawmill purposes. Each bid must state the price per thousand feet, board measure, Scribner Decimal C, log scale, that will be paid for timber cut and scaled prior to April 1, 1934. On April 1, 1934, the price may be increased in the discretion of the Commissioner of Indian Affairs in an amount not greater than twenty percent of the original purchase price and at the beginning of each three-year period thereafter a similar increase in price may be made by the Commissioner. No bid of less than $3.00 per thousand feet for the initial period of the contract will be considered. Each bid must be accompanied by a certified check for $20,000 on a solvent National Bank payable to the Special Disbursing Agent, Southern Navajo Agency, Arizona. The deposit will be returned to unsuccessful bidders, applied as part of the purchase price of successful bidder against timber actually cut, or retained as liquidated damages if the bidder shall fail to execute contract and furnish satisfactory bond for $50,000 within 60 days from the acceptance of his bid. The right to waive technical defects and to reject any and all bids is reserved. For copies of the contract, regulations, map of sale area, blanks for the submission of bids and other information apply to the Superintendent, Southern Navajo Agency, Fort Defiance, Arizona.

CHAS. H. BURKE
Commissioner

Washington, D. C., June 4, 1928.

by Senator Norbeck, and both in line with the recommendations of the Coordinating Committee on revision of boundaries in National Parks and National Forests. One proposes the revision of the boundary so as to add the Upper Yellowstone River Basin to the park. The other proposes additions in the northwest corner to include drainage areas of certain streams emptying into the Gallatin River, and at the northeast corner to include the drainage area of Pebble Creek, and along the present east boundary so as to follow the crest of the Absaroka Range as a natural boundary line.

A bill, opposed by the Department of the Interior, to revise the boundary of the Yellowstone National Park, introduced by Representative Addison T. Smith. This would eliminate approximately twenty-eight square miles from the southwestern corner of the Yellowstone containing Bechler River Meadows, desired as a reservoir site for storage of supplemental water for use by irrigationists in Idaho.

Two bills, introduced by Senator Trammel, to provide for the location and establishment of a National Park in the State of Florida, one to be known as the Ponce de Leon National Park. These bills were adversely reported upon by the Department as no special area was under consideration and such a bill, if enacted, would create bad precedent.

A bill to establish a National Forest reserve and a National Park in each of the several states, by Mr. Berger, of Wisconsin.

A bill introduced by Senator Norbeck to establish the Kendrick National Park, covering the Teton Mountain area as a separate National Park, instead of as an addition to the Yellowstone.

A bill to add to the Sequoia National Park an area on the northeast containing the privately owned sequoia groves on Redwood Mountain.

Washington Lumber Company Turns to Forestry

The St. Paul and Tacoma Lumber Company, Tacoma, Washington, has joined the ever increasing number of large timberland owners that are handling their forests on a sustained yield basis, according to a statement issued by the National Lumber Manufacturers Association.

Everett G. Griggs, president of the company, and other officials have conferred with forest research and management specialists of the Western Forestry and Conservation Association, who have made a thorough survey of the company's cut-over lands in various stages of reforestation. Plans have been drawn for effective handling of the fire problem, prompt restocking of logged lands and the development of a fixed forestry policy. It is expected some experimental planting will be done this fall. The enlistment of neighboring community interest in forestry will be a feature of the program.

A recent survey of privately owned timber lands revealed the fact that more than 21,000,000 acres, mostly owned by large lumber and paper companies, were being managed with a view to reforestation. Many of these companies are already operating on a sustained yield basis.

Forest Protective Group Formed in Arkansas

Organization of a National Forest Protective Association by the people of Sugar Grove, Arkansas, has been reported to the United States Forest Service. The primary purpose of the association will be to furnish voluntary aid to forest officers in the prevention and suppression of forest fires in the vicinity of and on the Ouachita National Forest.

This organization is one of few of its kind in the eastern United States. During the meeting at which the organization was effected, the opinion was expressed that such benefits from the Ouachita National Forest as prevention of erosion, money returned to the school district from National Forest timber sales, improved roads, business, and demand for day labor resulting from timber sales, and an abundance of game in the mountains would amply repay the citizens of the community for their aid in fire protection.

Movies to Feature Forests

Paramount News, through its Washington, D. C., representative opened up to the Forest Service what appears to be a very good avenue for educational work via the motion picture news reel. The Fox Movietone also recently invited a somewhat similar arrangement. What they principally are interested in are "tips" on possibilities for good news reel pictures. A big fire would especially attract them, at the same time offering an opportunity for foresters to put over educational material in the way of fire control and fire fighting methods.

North Carolina Forestry Association to Meet in September

According to Colonel Joseph Hyde Pratt, Chairman of the Executive Committee of the North Carolina Forestry Association, the eighteenth Annual Meeting of the Association will be held at Goldsboro, September 19 to 21, inclusive. Plans are being made to hold a forestry exhibit in connection with the meeting. The State Forest Service, the Extension Service of the United States Department of Agriculture, the United States Forest Service, and the National Committee on Wood Utilization of the Department of Commerce will cooperate to make this exhibit interesting and instructive. There will be a demonstration of forestry to illustrate the value of farm woodlands.

Hoo-Hoo Annual at Boston

New England lumbermen have begun preparations to entertain the Thirty-seventh Hoo-Hoo Annual, to be held in Boston, September 26, 27 and 28.

Ulmont M. Carlton, of the Dix Lumber Company, has been appointed chairman of the general committee in charge of arrangements.

Extension Foresters Seek to Speed Up Forest Tree Planting

Discussions that may have a far-reaching effect in forest tree planting as aided by the Federal Government and the States, were heard at the recent conference of Extension Foresters from the Central States in Urbana, Ill. A committee was appointed to make a study of State nurseries in order to determine why stock is not available in quantities large enough to meet the demand of State forest planting projects. The committee will report to the next annual meeting of the Land Grant College Association, in November, 1928. W. H. Brokaw, Extension Director of Nebraska, is chairman of the committee, which includes C. F. Monroe, Extension Director of North Dakota; George E. Farrell, of the Office of Cooperative Extension Work, Washington, D. C., and Extension Foresters I. T. Bode, of Iowa, and Parker Anderson, of Minnesota

Fire-Damaged Timber

Fire-damaged shortleaf pine logs brought $10.20 less per thousand board feet gross log scale and yielded only eighty-five per cent as much lumber as sound logs, a recent study made by the Forest Products Laboratory in the Ouachita National Forest shows.

To measure this loss the quantity and quality of lumber yielded by 218 shortleaf pine fire-damaged logs of varying sizes from a tract which had been ravaged by fires for a period of a hundred years or more, were tallied and compared with a similar tally of sound logs of the same size, position in the tree, and gross volume. A smaller quantity and poorer quality of lumber was obtained from the fire-damaged than from the sound logs. The fire-damaged logs contained only thirty-two per cent of high-grade lumber as against forty-six per cent for the sound logs; the lumber cut from the damaged logs totaled 25,973 feet, and that from the sound logs 30,560 feet; and the average value of lumber per thousand feet from the fire-damaged logs was $4.41 less than that from sound logs.

ERRATA

In the June issue, page 358, "By Their Bark Ye Shall Know Them," an error occurred resulting from the transposition of captions under the last two pictures. The tree with the divided trunk is the Western yellow pine and the last picture is that of the Southern loblolly.

Cowboys—Colts and Calves

(*Continued from page* 394)

in the mountain area and there are innumerable icy springs. Game is abundant, particularly the native blue grouse. Sage hens, once plentiful throughout eastern Washington, but now pretty much eliminated in most localities, seem to hold their own in the Wenatchee region and occasionally are seen in flocks of a dozen or more. Deer provide good hunting in the fall and there are bear and elk. The elk are the only wild creatures not native to the country, but they have thrived surpassingly well and increased rapidly in numbers since a small band was imported from Yellowstone Park about twelve years ago. It is not an uncommon sight to see one or more of the big animals grazing with the cattle.

The calf roundups in mid-July and the colt roundups immediately following are as glamorous and full of action as such affairs always have been in the cattle lands of the West. They are the real thing, and because they are real they have the professional rodeo and frontier days celebrations outclassed from breakfast to supper. Nothing fancy about the ranch roundups. Just dust and sweat and hard, gruelling work; but dust and sweat and work that spell romance with a capital R, the romance that has been confined and restricted by the things which the cowmen's part in the patchwork of progress made possible.

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Easily Carried and Operated by Anyone

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Write for descriptive circular and prices on the Indian and other styles.

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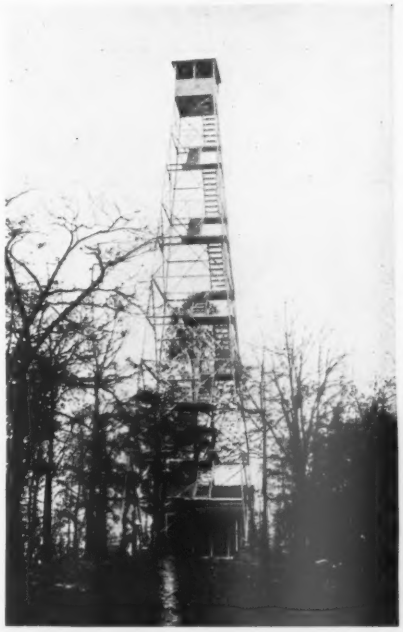

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. . . . The 73-foot tower shown in the picture was erected on Mt. Desert, near Putney, W. Va., by the West Virginia Game and Fish Commission.

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LOCATION AND AMOUNT.—All the merchantable dead timber standing or down and all the live timber marked or designated for cutting on an area embracing about 5,200 acres in Township 9 north, Ranges 25 and 26 East, G. & S. R. B. & M., North End Reserved Area, Apache National Forest, Arizona, estimated to be 30,089,000 feet B. M., more or less, of western yellow pine, Douglas fir, white fir, Engelmann and blue spruce and Mexican white and limber pine, approximately 94 per cent western yellow pine, exclusive of 6,800 M ft. more or less on an area to be cut over at the option of the purchaser.

STUMPAGE PRICES.—Lowest rates considered $2.00 per M for all species.

DEPOSIT.—$5,000 must be deposited with each bid to be applied on the purchase price, refunded, or retained in part as liquidated damages, according to conditions of sale.

FINAL DATE FOR BIDS.—Sealed bids will be received by the District Forester, Albuquerque, New Mexico, up to and including August 6, 1928.

The right to reject any and all bids is reserved.

Before bids are submitted full information concerning the character of the timber, conditions of sale, deposits and the submission of bids should be obtained from the District Forester, Albuquerque, New Mexico, or the Forest Supervisor, Springerville, Arizona.

A Mexican Industrial Romance

(*Continued from page* 413)

dustry was on its upward course it was early seen that the natural growth of the shrub could not be depended upon to maintain the supply for any very extended period. So experiments were inaugurated by private concerns, and by the Mexican Government as well, looking toward the cultivation of the plant. At first these were successful—in only one direction. Under cultivation and irrigation the plant grew rapidly enough, but when it had attained a size suitable for treatment it was found that the rubber content was far less than that of the natural growth of similar size and age. It seemed a reasonable supposition that as Nature had provided for the secretion of the rubber as a protection against the normal desert conditions under which the plant grew, it was essential that these conditions be duplicated so far as possible if cultivation were to be made a success.

A Guayule plant showing the complete and extensive root system, from which it produces shoots

That this has been done would seem to be demonstrated by the published reports that artificial propagation and cultivation of Guayule would yield two thousand pounds of rubber to the acre. There is one point, however, of great importance in this connection which those who are interested as observers would like to see solved. As stated, the natural habitat of the plant is the arid, mountainous and rocky desert region at an elevation of 2,500 to 6,000 feet above sea level. Yet the experiments which are reported to have produced such wonderful results, and which hold out such desirable encouragement, are being carried out in one of California's most fertile valleys and at no great distance above sea level. Several hundred acres are now under cultivation and large additions are being made each season.

No authoritative statement has yet been made as to the result of these experiments, although enough has been made public to afford foundation for the reports published. But if it should prove feasible to produce as much as two thousand pounds of rubber to the acre, or even less, in the manner indicated, then an industry of incalculable importance will have been added to the productivity of the country, and another chapter will have been added to the romantic one of Guayule.

Pruning Eastern White Pine

A bulletin recently published by the Harvard Forest and the Massachusetts Forestry Association reveals some interesting results of a study jointly undertaken by these two organizations in the pruning of Eastern white pine. This operation has long been recognized as indispensable to successful fruit growing, but has been looked upon by many foresters and lumbermen as impracticable when applied to timber trees for the improvement of lumber.

These investigations, which have been based on actual practice in stands of white pine that had been pruned twenty-five or thirty years ago, reveal that profits from pruning, done properly and at the right time, range from $15 to $35 or more per thousand board feet; and on a basis of area these figures would show a net profit of $200 to $600 an acre, after an allowance for compound interest at six per cent on the cost of the pruning operation. Thousands of acres of white pine which have been planted in Massachusetts during the past twenty-five years, if pruned would show a handsome profit.

As the object of pruning is to obtain as much clear lumber as possible, according to the authors of the bulletin, pruning should be confined to trees of small diameter, three to four inches at breast height, and should only be applied to the dominant trees with straight trunks, and of those only 150 to 300 per acre. That is, only the trees that are expected to compose the final stand should be pruned and they should be from twelve feet to seventeen feet apart.

The operation of pruning may be done at any time of the year but preferably in the autumn, and should begin when the trees are from ten to sixteen feet in height, not more than half of the height of the tree being pruned at a time.

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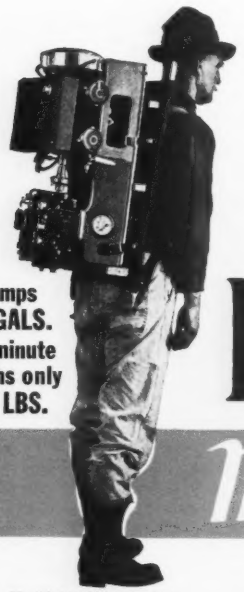

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